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FROM THE EDITOR'S DES

Dear Fellow Academician,

It is nice to meet once again but half
It was indeed heartening to note tha
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Happy reading !

THE EDITORS

CONTENTS

AWARD WINNING PAPERS

DR. JAMES FLETT ENDOWMENT AWARD (FIRST PRIZE)

HUMAN MILK BANKING IN A DEVELOPING COUNTRY - A SYSTEM THAT WORKS!

Jayashree Mondkar, Bina Lobo, Sharmila Kulkarni, Anju Gupta

22/24, Vaibhav Apartments, S. K. Bole Road, Dadar, Bombay-400028

The functioning of a human milk bank with need-based modifications made for a developing country is described. Expressed breast milk collected from mothers for their own babies who were not in a position to suck, was fed fresh to them. The surplus and that from voluntary donors was pooled and stored in stainless steel containers in aliquots of 100 cc in the freezer at - 20 C. Samples from each container were cultured before freezing. If bacterial counts were below a selected level, milk was fed unprocessed. The remaining milk was subjected to pasteurization. Pre and Post pasteurization cultures were also done. 50 samples of milk were analyzed for the biochemical constituents in aliquots, of the fresh sample, after freezing the sample at - 20 deg. C for 5 days and following heat treatment. 25 milk samples were analyzed for IgA levels in a similar manner.

A total of 1049.49 liters of expressed milk was collected over a period of one year of which 42.42 liters were banked. The remaining was fed fresh to babies. A volume of 21.40 liters was utilized from the bank during this period. This ensured that every neonate in the hospital received only human milk.

A statistically significant ($P<0.001$) increase in the number of samples showing no growth was observed with freezing alone and with reduction in colony counts for pathogenic organisms. After heat treatment, 3.42% of sample cultured organisms and were therefore discarded, thus giving a discard rate of 2.12%. No significant change in the protein, lactose or total lipid or IgA levels was observed post freezing and post heat treatment. However, the triglycerides levels showed a decrease with a corresponding increase in the free fatty acid levels which was significant ($P<0.001$) in the post freezing samples.

The modifications made by us to suit a developing country included use of less stringent donor selection criteria, supervised milk collection only in the hospital and not in the community to reduce bacterial contamination. Use of stainless steel instead of glass or plastic containers for better durability and ease of sterilization and use of shaker water bath in place of conventional pasteurizer for heat treatment of milk.

DR. JAMES FLETT ENDOWMENT AWARD (SECOND PRIZE)

DO EXCLUSIVELY BREAST FED INFANTS REQUIRE WATER SUPPLEMENTATION DURING SUMMER ?

Jyoti Krishna, H. P. S. Sachdev

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This study was designed to determine the need of water supplementation to maintain water homeostasis in exclusively breast fed infants during summer months in a tropical country. A

pre-study questionnaire revealed that 97.1% of the 34 nurses and 62.9% of 70 doctors advocated this practice. The 45 healthy male exclusively breast fed subjects, aged 1 to 4 months, were evaluated during 8 hour day time observations. These were divided into two groups: (i) Study Group (n=23) in which the infants received breast milk only, and (ii) Control Group (n=22) in which partial water supplementation as per usual practice was allowed in addition to breast milk. The maximum room temperature ranged between 34 and 41 C (mean 37.7 (Study) Vs 37.0 C (Control) and relative humidity ranged between 9 and 60% (mean 41.6 Vs 41.6%; below 50% in all except 3 infants). The mean (95% confidence interval) water intake in the control group was 11.4% (6.6 - 16.2%) of the total fluid intake. With comparable (p >0.05) baseline characteristics, environmental exposure conditions and total fluid intake (7.26 Vs 7.16 ml/kg/h), the urinary output (2.91 Vs 3.25 ml/kg/h) and hydration parameters were similar in the study and control groups. The hydration parameters were similar in the study and control groups. The hydration parameters were well within the normal range in all the 45 subjects and included maximal urine osmolality (mean 219.4 Vs 214 mOsm/kg H2O), serum osmolality (mean 281.7 Vs 282.3 Mosm/kg H2O), weight change (mean 0.13 Vs - 0.15%) and maximal rectal temperature (mean 36.9 Vs 36.8 C). Consumption of supplemental water had a significant negative correlation with total breast milk intake (all subjects by multivariate logistic regression). It is concluded that water supplementation is not required for maintaining water homeostasis under these environmental conditions, a reduced total breast milk intake is a potential disadvantage of this practice and there is need for proper education of lay public and personnel on this subject.

DR. S. T. ACHAR ENDOWMENT AWARD

ROLE OF QUANTITATIVE SERUM C.R.P. IN DIAGNOSIS AND MANAGEMENT OF BACTERAEMIA IN FEBRILE CHILDREN WITHOUT APPARENT FOCUS OF INFECTION

Vikas Kohli

Dept. of Pediatrics, PGIMER, Chandigarh

In a prospective study of 100 febrile children (age 1 month - 3 yrs) (rectal temperature > 39 C) without an identifiable focus of infection 10 children had a blood culture +ve bacteraemia and 9 patients had serology +ve bacteraemia, 6 had UTI, 5 otitis media and 8 meningitis. A diagnosis of non-bacterial infection was made in 62 patients. Staph aureus was the most common bacteriologic isolate on blood culture and by serology. On comparison of patients of bacteraemia (culture +ve and serology +ve) with non bacterial infection, the sensitivity and specificity of the acute phase reactants was found. Quantitative CRP > 40 mg/l had the best combination of sensitivity, specificity and high negative predictive value. TLC > 15,000/cu.mm, m-ESR >25mm and temperature > 39 C had high specificity (95-100%) but low sensitivity. We found sequential serum CRP concentrations to be a sensitive indicator of recovery from infection or imminent complications.

DR. S. S. MANCHANDA NEONATOLOGY RESEARCH AWARD

FAT AS AN ENERGY SUPPLEMENT IN THE NUTRITION OF VERY LOW BIRTHWEIGHT BABIES

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Two kinds of oils i) Polyunsaturated fatty acids (PUFA) rich Safflower Oil and ii) Medium chain triglyceride (MCT) rich Coconut Oil were added to the feeds of 46 very low birthweight (VLBW) babies to see if such a supplementation is capable of enhancing their weight gain. 22 well matched babies who received no fortification served as controls. The oil fortification raised the energy density of the feeds from approximately 67 kcal/dl to 79 kcal/dl. Feed volumes were restricted to a maximum of 200 ml/kg/day.

Mean weight gain was highest and significantly higher than the controls in the Coconut oil group (19.47 +(-) 8.67 g/day or 13.91 g/kg/day). Increase in the triceps skinfold thickness and serum triglycerides were also correspondingly higher in this group. The lead in the weight gain in this group continued in the followup period (corrected age 3 months). As against this,higher weight gain in Safflower oil group (13.26 +(-) 6.58 g/day) was compared to the controls (11.59 +(-) 5.33 g/day) failed to reach statistically significant proportions, probably because of increased steatorrhoea (stool fat 4+ in 50% of the samples tested). The differences in the two oil groups are presumably because of better absorption of MCT rich coconut oil. However, individual variations in weight gain amongst the babies were wide so that some control babies had higher growth rates than oil fortified ones. Therefore, it is recommended that fat fortification should be individualized and reserved for babies with inadequate weight gain despite adequate feed volumes or in whom feed volumes have to be restricted.

The technique of oil fortification of feeds needs special attention. The method is fraught with dangers of intolerance, contamination and aspiration. Long term effects of such supplementation are largely unknown.

In conclusion, coconut oil fortification is capable of enhancing weight gain in VLBW babies. However, such fortification should be used in selected situations only rather than as a routine nursery policy.

DR. V. BALAGOPAL RAJU ENDOWMENT AWARD (FIRST PRIZE)

AN EVALUATION OF ONSET AND SEQUENCE OF EVENTS AT PUBERTY IN TRIBAL AND NONTRIBAL FEMALE OF RURAL CENTRAL INDIA

Sarita Badlani

15, Shilakunj, MPEB Colony, Jabalpur 482008.

153 girls aged 9-15 years from the rural nontribal area of Panagar and 298 girls of the same age from the tribal area of Mandla in M.P. were studied over a period of one year at 3 monthly intervals with regard to anthropometry and sexual development. The observations show that inspite of a lower socioeconomic status, the average tribal girl had a significantly better weight for height than the rural nontribal girls as well as the local urban girls. They attained sex characters significantly earlier and the total time taken for completion of maturation was shorter than the mean period observed from across

sectional data pertaining to adolescent urban girls of this region.

DR. V. BALAGOPAL RAJU ENDOWMENT AWARD (SECOND PRIZE)

CLINICAL AND ECHOCARDIOGRAPHIC CORRELATIONSHIP IN ACUTE RHEUMATIC FEVER

Anil Kumar Mongia

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Twenty eight children with first attack of acute rheumatic fever were subjected to echocardiographic evaluation in an attempt to demonstrate cardiac involvement in this disease. Eleven subjects with no obvious underlying heart disease or any past history of acute rheumatic fever served as controls. Fifteen of the 28 children with acute rheumatic fever had clinical evidence of carditis, 2 having cardiac failure as well. Echocardiographic evidence of cardiac involvement was present in 13 of these 15 patients. Further, heart failure was demonstrated to be the result of valvular incompetence rather than myocarditis. However, echocardiography documented as underlying mitral and/or aortic valvulitis in 4 (30.7%) of the remaining 13 subjects with acute rheumatic fever who had no clinical evidence of cardiac involvement. Follow up echocardiography, available on a limited number of patients revealed healing of mitral valvulitis in most patients. Doppler echocardiography may be helpful in detecting valvular regurgitation when it is clinically inaudible in patients thought to have acute rheumatic fever. Echocardiography is helpful in assessing the presence and degree of cardiac involvement in acute rheumatic fever and facilitates serial assessment of severity of carditis during the course of acute rheumatic fever.

NEAR MISSED AWARD PAPERS

JF/01. EVALUATION OF TRADITIONAL CRITERIA FOR ASSESSMENT OF BIRTH ASPHYXIA

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Sixty two neonates of 37-41 weeks gestation were divided into 2 groups of 31 each with one minute apgar score of 0-6 and 7-10 respectively. All babies, born by vaginal delivery, were assessed at birth as follows:-

a) Traditional criteria of cry, respiration, colour, cord pulsation, activity and reflex response, recorded soon after birth.

b) Apgar score at 60 +(-) 15 seconds of life.

c) Umbilical venous blood Ph was done.

d) Type of resuscitation given by the duty resident was also recorded. Each of traditional criteria for assessing birth asphyxia separately and also in various combinations were correlated to one minute Apgar score, cord blood Ph and resuscitation measures needed. The various traditional criteria at birth showed good correlation with one minute Apgar Score (r=0.6105 to 0.7379, P <0.01; = 0.8803 to 0.9512), resuscitation measures needed (r= - 0.5626 to - 0.7335, P < 0.01; = - 0.8374 to - 0.9512) and to some extent with cord blood Ph (r for cry = 0.2437, P > 0.05; for other criteria, r = 0.2871 to 0.4479, P <0.01).

The cord blood Ph was better correlated with traditional criteria at birth than with one minute Apgar Score (r=0.2127 P > 0.05 = 0.3680. The combination of colour, cord pulsation and reflex response was the best combination of traditional criteria when compared to one minute Apgar Score (r=0.8318, P < 0.01; = 0.9865), and resuscitation measures needed (r = 0.8143, P < 0.01; = - 0.9652) and equivalent to the best correlated with respect to cord blood Ph (r = 0.4647, P <0.01; = 0.7160).

Excluding cord pulsation the combination of cry, colour and activity is the best combination when compared with one minute Apgar score (r=0.7768, P<0.01; = 0.9393), Cord blood Ph (r=0.3842, P<0.01; = 0.7138) and resuscitation measures needed (r= -0.7828, P <0.01; = _ 0.9517). This degree of correlation in statistically equivalent to the overall best possible combination including cord pulsation.

JF/02. BREASTFEEDING & WEANING PRACTICES IN TRIBAL I.C.D.S. BLOCK WOMEN OF MADHYA PRADESH IN RELATION TO NUTRITIONAL STATUS OF THEIR CHILDREN

Ajay Kumar Gaur

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A base line survey of I.C.D.S. block (Tribal) Karahal, District Morena was undertaken to collect information regarding Breast feeding and weaning practices among tribal women and nutritional status of their children.

Applying simple random sample selection technique six Anganwadies were selected, where a door to door survey was done. Total mothers interviewed were 139, out of 498 household surveyed. Maximum number of lactating mothers fell in between the age group 25-35 years (43.16). The usual time when the maximum number started breastfeed was found to be 48 hours (36.69%) and 59 out of 139 mothers used to practice breastfeeding upto 36-52 weeks. They avoid giving colostrum to the newborns, and in

place of it they give some prelacteal feeds like honey and sugar water. 83.45% of women were started weaning after the age of one year and, that too, with chapatti (51.79%), rice and chatni.

The lactating mothers have got no knowledge about the exact age of weaning, importance of weaning and type of enriched weaning foods. The weaning practices were found to be faulty.

Six hundred and thirty-seven (637) children from 0-6 years were examined for nutritional grades and nutritional deficiencies diseases. Majority of children were found to be in malnutrition grade I & II (29.51%) & 29.67% respectively). None of children had goitre.

Existing weaning and breast feeding practices were found to be unsatisfactory resulting in faltering of the growth of children as evident by high prevalence of nutritional deficiency in children. More emphasis should be given on protecting, promoting and supporting Breast feeding as BREAST IS BEST.

JF/03. EFFICACY OF MASSIVE DOSES OF NONABSORBABLE ANTIBIOTIC THERAPY IN PERSISTENT DIARRHEA

Shinjini Bhatnagar, Monica Bhola, Sunil Sazawal

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Overgrowth of aerobic and anaerobic bacteria in the upper small intestine is common in persistent diarrhea (PD). Further, nearly half of PD cases excrete aerobic bacterial enteric pathogens in the stool. we hypothesized that massive dose of a broad spectrum oral antibiotic by eradicating aerobic overgrowth and specific bacterial pathogens may hasten recovery for persistent diarrhea, when given together with optimum feeding.

Among 71 patients randomly assigned to oral Gentamicin 50 mg per kg body weight per day, 3 were excluded for gross blood in stools after randomization. In remaining 68, 33 received drug and 35 Placebo. The two groups were comparable for several clinical features including stool volume during a 24 h observation period, and in the duodenal and fecal microflora. Patients recovering by 6 days of treatment were similar in drug and Placebo (45 and 50%) groups. The stool volume during 24-72 h, 72-120 h and 120-168 h after treatment showed no clinically and statistically significant differences in the group. The percent weight gain (g) at 168 h compared to onset of treatment in drug (median 1.2, range 11 to -10.1) and Placebo (median 1.6, range -11 to 9.0) were statistically not different.

Oral Gentamicin was not more effective in terms of stool volume, weight gain or recovery rates in patients excreting adherent E coli and in those with aerobic small bowel overgrowth (>_10-5) when compared to those without these characteristics.

Oral Gentamicin is not effective in persistent diarrhea overall, or in groups associated with small bowel aerobic overgrowth or adherent E coli excretion and as such its use as recommended in the western literature is unwarranted.

JF/04. CEREBRAL PALSY: A CHALLENGE TO FAMILY AND COMMUNITY DYNAMICS IN INDIAN SCENARIO

Sanjay Sahi

S.S. Medical College & General Hospital, Rewa

The aims and objects of this study were to study the feelings and behavior of parents of cerebral palsied children, to correlate various factors influencing parental response, to child's handi-

cap, to study the factors that significantly improve the coping ability of the parents and to expose the problems faced in dealing with these families in our socio-cultural milieu. This paper emphasizes the need of social measures with least cost effectiveness ratios for tackling the childhood disabilities by exposing the problems prevailing in our socio-cultural milieu. The study was divided into three sections. In first part, sixty children aged between six months to six years with cerebral palsy were studied clinically. In second part, the psychiatric evaluation was done of all the parents of these children. In third part, various factors were related to parental feelings and behavior. Various parental feelings and behavior observed were shock 14 (23.33) bereavement 12 (20%), guilt 40 (66.56%), over-protection and over-affection (46.66%) over-indulgence (20%) over-anxiety (30%), over-authority 5 (8.33%) under-affection and rejection 4 (6.66%), embarrassment (13.3%) chronic sorrow (13.3%), child abuse (1.66%), depression (10%), feelings of inadequacy (3.33%), stigma (11.66%), anger (26.66%). Various factors that were found to influence the parental response were, the severity of the illness, whether the disease was congenital or acquired, age of onset of illness and of diagnosis, presence of pre-existing emotional disturbance within the family, the nature and effects of the illness itself, presence or absence of other affected siblings, repeated hospitalization, cost of the illness. This study exposed the problems prevailing in our society which included the magnitude of the problem, the misconceptions and superstitious beliefs about the child's handicapped the ignorance and rejection of girl child (statistically significant $P < 0.05$).

This study presents an attempt to improve the coping ability of the family by deriving the factors that significantly affect the parent and handicapped child's relationship. Aside from ready availability of competent trustworthy professional care the factors that can significantly improve the coping ability are - the alleviation of misconception and myths among masses, by changing attitude of parents towards girl child, by changing attitude of society towards these handicapped children, by understanding the strong relationship between child's nutritional neurotic and behavioral problems and parent's psychosocial and economic problems.

It is the combined efforts of physicians, parents, community, social voluntary organizations and National policies of the country that can enable these handicapped children to contribute their share failing this we will have to regret perhaps in Lord Tennyson's immortal words

"SO MANY WORDS'
SO MANY WORDS
SO MUCH TO DO
SO LITTLE DONE"

JF/05. SOCIO-CULTURAL PATTERNS, DEVELOPMENT & DEPRIVATION IN 2-6 YEAR OLD URBAN CHILDREN

Deepak Jain, Alim Siddique

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A representative sample of apparently normal 616 preschool children (2-6 Yrs) was collected by a systematic random survey of a city. Their nutritional assessment was made by measuring the mid upper arm girth by the method laid down by Jellife. Their developmental assessment was made as per the WHO suggested culture appropriate test battery. The environment was screened for potential risk or protective factors using the WHO family interview protocols. The results showed that 50% of the children were malnourished according to the Shakir standard, and the whole sample was malnourished if Wolanski Standards were applied. 3 groups having distinct socio-cultural patterns could be identified viz. Low Socio-economic status, middle income and

high income groups. The average PCI of the sample was Rs.1500. Each of their characteristics are described separately. The developmental performance of all the children was found to be delayed in comparison to British, American and Baroda norms. However, they were more or less at par with their rural peers. Based on their responses they could be grouped into 4 groups, composite (mean), best performers, malnourished and Low Socio economic Status groups. The best performers though delayed at times kept pace with the other western and Indian norms. While the malnourished were 4-6 months behind. The composite group was the true mean of the developmental scores obtained. Some skills 'big & little', 'draws square', 'walks heel to toe' and 'draws circle' were found to be minimally affected by the environmental variables, and were thus called best indicator skills for the group. Analysis of the environmental enquiry revealed many positive and negative factors; of which 'income' was found to be the only protective factor-for, better income reflected as better performance in all groups. Early developmental screening and monitoring of all children particularly high risk groups using locally adaptable culture appropriate technology is recommended.

JF/06. OPTIMUM NEEDLE LENGTH FOR DPT INOCULATION OF INDIAN INFANTS

Krishan Chugh, Bharat Bhushan Aggarwal

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Vaccination against diphtheria, pertussis and tetanus (DPT) forms a major part of the Universal Immunization Programme (UIP). Millions of injections are given every year and attempts are being made to further increase the coverage. Besides the problems of manufacture, distribution and field logistics comparatively high incidence of side effects is also an important cause of less than excellent acceptance of the vaccine by the general public and consequent below target coverage.

Correct placement of the injected vaccine into the deep muscular layers is known to decrease the incidence of local reaction, including the 'nodule' formation 1,2. However, not enough attention has been paid in the UIP towards this aspect. Clear instructions regarding the length of the needle to be used, the angle at which to inject and the site of injection have not been provided to the field worker.

In a recent review of the subject of intramuscular (I.M.) injections in children Bergeson et al 3 concluded that upper lateral thigh is the most appropriate site for infants. They recommend that a 2.5 cm (1 inch) needle should be directed inferiorly at an angle of 45 degrees with the long axis of the leg and posteriorly at a 45 degrees angle to the table top with patient supine. However, all are not in agreement with these recommendations. Hughes and Buescher 4 advise to insert the needle perpendicular to the skin to a depth of 2 to 4 cm in a book on Pediatric Procedures.

To make a recommendation for needle length for IM injections on an objective basis Hick et al 5 studied the depth of fat layer over the anterolateral thigh of 24 infants using high-frequency, real time ultrasonography. They concluded that a needle length of 2.5 cm at an angle of 45 degrees is suitable for 4 months age and then a repeat dose (Booster) at 18 months age we decided to collect similar data in all these age ranges to make recommendations regarding optimum needle length for DPT vaccination in Indian infants. Such a study appeared desirable in our own population as the weights at birth and infancy being higher in USA than in India subcutaneous fat layer thickness is expected to be different in the two populations.

JF/07. EVALUATION OF MCH SERVICES IN E.S.I. DISPENSARY

Arabinda Mohanty, A. K. Mishra, Sabita Mohanty

E.S.I. Dispensary, Mancheswar, Holding No.1890, V.S.S. Nagar, Bhubaneswar 751004.

Evaluation of MCH was conducted on the achievement from April 1989 to March 1990 of ESI Dispensary, Mancheswar with 4101 IP Unit was conducted. Structure analysis shows no restriction of maternity benefits after 2 pregnancies and no targets for immunization and family welfare activity. No vital statistics could be calculated due to lack of registering the IP population age-sex wise. Process of MCH care analysis depicted 60 cases of pregnancy registered out of which more no. of primi-para cases (58.3%) than multiple pregnancy (41.6%), 23.3% were having malnutrition and 5% maternal death due to pregnancy. 41.66% deliveries were conducted by untrained personnel. In immunization there was 90.74% drop out in measles - highest and lowest -32.33% in 2nd dose of OPV+DPT. 220 IPs with total population of 1120 and 603 children were surveyed by a questionnaire method. Under utilization of antenatal, natal and post natal services, family welfare and immunization programs were observed.

JF/08. OPTIMUM AGE FOR MEASLES VACCINATION; IS IT EARLIER THAN NINE MONTHS ?

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There is still controversy about the optimum age for measles vaccination on countries like India, where the incidence of measles infection is quite high in the first few months of life. This study was undertaken to find out the earliest effective age for measles vaccination. Hemagglutination inhibition (HI) antibodies were detected in 242 children at 0-12 months of age. Maternally derived passive measles antibodies waned to undetectable levels in over 90% of these children by 7 months of age. The seroconversion response and post immunization antibody titres after measles vaccination were estimated in 173 infants of 6-12 months of age. Children vaccinated at 7-8 months of age showed an equally good response as compared to when immunized at 9-12 months of age (89.1% vs 92.0% & 17.74 vs 20.35; P).05). The rate of seroconversion was inversely related to pre-immunization titres but was not influenced by nutritional status of children. The side effects following vaccination were few and mild in nature even in those vaccinated at earlier than 9 months.

These results indicate the suitability to start immunization against meales at present from 7 months onwards to protect a higher number of susceptible infants effectively.

JF/09. PREVALENCE OF DRUG ABUSE AND ADDICTION IN CHILDREN AND ADOLESCENTS IN GORAKHPUR

Krishna Awtar, Y. D. Singh, A. K. Rathi, C. K. Rastogi, K. P. Kushwaha, K. P. Singh

Dept. of Pediatrics, B.R.D. Medical College, Gorakhpur

Present study has been done in 10 Anganwadi centres of ICDS urban project, mainly in the slum areas of Gorakhpur city, having a population of 10,187 and in the 4 colleges of Gorakhpur city. 580 children and adolescents at 10 Anganwadi centres and 750 students at 4 colleges between 10-18 yrs. were studied by means of questionnaire card.

Overall, prevalence of drug abuse was 25% in slum areas and 18% in college students. Abuse of Tobacco was frequent (50.3% & 72.5%)

followed by alcohol (11.7% & 16.2%) in both groups respectively. Cannabis was also used by some children (0.6%). More abusers were from Hindus with low educational status and low family income. No one was found to be abusing tablets and street drug.

JF/10. POSTNEONATAL INFECTIONS IN RELATION TO BREAST FEEDING IN VERY LOW BIRTHWEIGHT BABIES

Umesh V. Vaidya, Vishnu M. Hegde

Dept. of Pediatrics, T.D.H. Building, K.E.M. Hospital, Rasta Peth, Pune 411011.

17% of VLBWs discharged from our nursery died in the follow up period (one year) of serious illnesses, namely, septicaemia (n=8), gastroenteritis (n=6), pyogenic meningitis (n=1) and sudden infant death (n=1). Mothers of 12 of these (68.5%) had developed breast failure in the nursery itself, while the others were on breast plus top feeding. Only one baby was purely breastfed at the time of death. Not only deaths, but infections requiring hospitalizations were also significantly lesser in the pure breastfed months as compared to top feeding months (3 and 9 episodes per 100 child months respectively).

Episodes of gastroenteritis and septicaemia were strikingly lesser not only in the exclusively breastfed periods, but in partial breastfeeding months too. Otitis media was seen only in exclusively topfed babies. There were, however, no significant differences in the occurrence of upper respiratory tract infections in the breastfed, partially breastfed and topfed babies.

Inspite of active encouragement, incidence of breastfeeding in VLBWs remained low, the causes being inadequate rooming in, prolonged intravenous and nasogastric feeds, poor sucking reflexes and prolonged hospitalization. Only 41% of the VLBWs, as compared to 100% of controls, were purely breastfed at discharge. Incidence of breastfeeding fell further on discharge, and 35%, 56% and 68% of VLBWs received no breast milk by 6, 9 and 12 months respectively.

In view, of the very high risk of serious infective illnesses in the VLBW babies, and the undisputed protective influences of breast feeding, measures to initiate and maintain lactation in these mothers will have to reach aggressive proportions.

JF/11. MATERNAL KNOWLEDGE, ATTITUDE & PRACTICES ON INFANT NUTRITION AND NUTRITIONAL DEFICIENCY DISEASES

P. Angayarkanni, V. Soundararajan

ICDS Project 3, Madurai

CONCLUSIONS:

1) 100% mothers agreed that Breastfeeding is best for the baby.
2) The importance of Colostrum & its feeding should be stressed.
3) Out of the 65 mothers only 4 mothers gave undiluted milk. Some of the mothers even though, they knew that undiluted milk should be offered to the baby, their poverty hinders their way.
4) Still imparting of nutrition education on weaning practices and health education on sterilization of bottles and promotion of feeding through Palladai or Tumbler with spoon should be done.
5) To come out of false beliefs like
   i) "Marasmus" is due to eating of over ripened coconut and toad falling on pregnant mother's skin.
   ii) Greenish diarrhoea in infants is due to greens in the Maternal diet.
   iii) Angular stomatitis is due to increased

body heat; Health education should be given.

6) High rate of female literacy should be achieved.
7) Per capita income of the family should be increased.

JF/12. A NEW TRANSPORT INCUBATOR FOR PRIMARY CARE OF LOW BIRTH WEIGHT BABIES

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A new portable, cheap and indigenous incubator made of polystyrene has been devised for delivery of primary health care services to the newborn babies in the community. The technical feasibility of the incubator to transport babies safely has been tested in the initial experiments on moderately preterm babies. Twenty six babies with a mean weight of 1726 g (range 1388 - 1981g) and gestational age of 35.3 weeks (range 34-38 wks) have been continuously observed for 2-hour observation period, in naked and clothed conditions. Rectal, abdominal skin, foot, ambient air and nursery temperatures have been recorded. The baseline core temperature of the babies was 36.65 (+(-) 0.17) C (mean +(-) standard deviation). After incubator care it was recorded as 36.80 (+(-) 0.10) C in naked and 37.01 (+(-) 0.18 C in clothed babies ($p < 0.01$). An ambient air temperature range for these babies being 31.0 - 33.8 C) was achieved within 30-60 minutes of incubator stay (nursery temperature being 28 +(-) 0.6 C). No evidence of carbon dioxide narcosis, hypoxia, acidosis, or adverse thermoregulatory behavior was observed. One baby had hypoglycemia (Blood sugar 35 mg/dl) and another had sweating.

Additional facilities like administration of oxygen, phototherapy, X-rays can be provided through the incubator without disturbing the baby.

JF/13. A COMPARISON OF ANTIBODY RESPONSES OF INFANTS TO INACTIVATED AND LIVE ORAL POLIO VIRUS VACCINES

N. C. Chethana Kumari

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Two groups of infants, from 10 to 32 weeks of age, were given either 3 doses of oral Polio virus vaccine (IPV) at an interval of 4 weeks. Venous blood was collected before giving the first dose and 4 weeks after the third dose. Polio virus neutralism antibody levels were determined in these sera, and seroconversion rates were calculated in seronegative infants, (with no antibody detected at 1;4 dilution of serum) and in infants with maternal antibody separately.

In infants with Maternal antibody, the lack of antibody in the post-immunization serum was taken as evidence of no antibody response. The above data were pooled together and the results analyzed were as follows. The denominators were 53 infants in the IPV group and 49 infants in the OPV group. The seroconversion rates were 98, 98 and 96 percent to types 1, 2 and 3 Polio viruses respectively in the IPV group and 85, 89 and 55 percent in the OPV group. Among the IPV group, 86, 78 and 82 percent of infants had post-immunization antibody titres of 1:512 or greater to types 1, 2 and 3 Polio viruses, and in the OPV group such titres were seen only in 36, 54, and 17 percent.

Thus, 3 doses of IPV have superior immunogenic efficacy than 3 doses of OPV in terms of sero-conversion rates and antibody levels.

STA/01. ANTRAL GASTRITIS DUE TO HELICOBACTER PYLORI IN CHILDREN WITH RECURRENT ABDOMINAL PAIN

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Seventytwo children suffering from recurrent abdominal pain (RAP) due to Helicobacter pylori infection of the gastric antrum were investigated. The age ranged from 1-1/2 to 12 years. The RAP was encountered 4 times more common in male children than female children. Upper gastrointestinal endoscopy revealed antral gastritis: 32%, erosive gastritis: 14%, duodenal ulcer: 8.3%, gastroduodenitis: 8.3%, esophagitis and antral gastritis: 5.5%, gastric ulcer: 4.2% and duodenitis alone: 2.7% patients. In 25% patients endoscopic examination was normal. Four biopsy pieces were taken from gastric antrum of all the patients. One biopsy piece was immediately immersed in rapid urease test (RUT) medium in the endoscopy room. Two pieces of biopsy were kept in normal saline in a sterile tube for Gram staining and culture. Fourth biopsy piece was kept in 10% neutral buffered formalin for histopathology. The RUT was labelled positive if colour changed to pink within 5 minutes. The RUT was positive in 61.1% of patients. In all the patients with duodenal and gastric ulcer, RUT was positive. Gram staining of one crushed biopsy piece on a glass slide was positive for Gram negative spiral shaped H. pylori organisms in 50% patients. Second biopsy piece from the sterile tube containing normal saline within half an hour was cultured in microaerophilic Standard medium for H. pylori. Culture was positive in 15.3% patients. Standard paraffin sections of the biopsy piece for histopathology were stained with hematoxylin and eosin for light microscopy. Giemsa staining was done to identify H. pylori in the mucus layer of biopsy specimen. Histopathology showed antral gastritis in 72.2% patients (chronic active gastritis in 34.7% and active gastritis in 37.5% patients). Giemsa stain was positive for H.pylori in 48 patients out of 52 showing antral gastritis. The RUT and histopathology gave good positivity rate compared to culture and Gram stain. The RUT an endoscopic room test gives quick diagnosis of H. pylori infection and is very helpful in planning the treatment at the same time whereas rest of the investigations take time. The RUT positive patients received Tripotassium dicitrabismuthate (TDB) and metronidazole or amoxicillin. All of them showed remarkable improvement. The association of H. pylori infection and antral gastritis and peptic ulcer disease in children confirms its intimate role in RAP. Helicobacter pylori infection certainly represents an identifiable and treatable cause of recurrent abdominal pain.

STA/02. HEMATOLOGICAL PROFILE OF MALARIA

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Hematological complications are frequently seen in children with malaria. Four hundred and ninety five cases of malaria were studied over a period of 28 months from October, 1987 to January, 1990. Only confirmed cases of malaria were included in the study. Anemia was the commonest hematological manifestation observed in 350 (70.7%) children. Several anemia (Hb < 5 gm %) was observed in 55 (11.11%) patients and 3.63% had haemoglobin level less than 2 gm%. Four patients had severe intravascular hemolysis, severe anemia with hemoglobinuria and oliguria.

Leucocyte blood picture is quite variable in malaria. 84 (16.9%) children had leucocytosis (Total leucocyte count (TLC) > 12000/mm3), among these 24 (4.8%) had TLC more than

20000/mm3. Ten patients had TLC > 50000/ mm3, with peripheral blood smear showing more then 5% premature cells (leukemoid reaction). Such type of leukemoid reaction has not been reported in literature so far. Four patients had leukemoid reaction with normal total leucocyte count. All these patients showed dramatic improvement, the leucocyte picture returned to normal with in a period of 3-7 days after specific antimalarial therapy. 76 (15.3%) patients had leucopenia. Other changes noted in leucocytes were monocytosis in 8.4%, eosinophilia in 4.4% and changes in neutrophils in the form of shift to left and preponderance of band forms in 20% patients.

Reports of platelet count were available in 46 (9.3%) patients only. Thrombocytopenia was observed in 12 of these children. Two had disseminated intravascular coagulation.

Pancytopenia was observed in one patient and it has never been reported in literature so far. It may be because of heavy parasitemia producing severe bone marrow dysfunction.

STA/03. IMMUNE STATUS OF CHILDREN WITH IDIOPATHIC NEPHROTIC SYNDROME

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Forty children with idiopathic nephrotic syndrome in the age group of 1 to 12 years were studied for their immune status. The proteinuria selectivity index was below 15% in all the patients, putting them in to the highly selective group. The serum Ig G level was significantly reduced in nephrotic children averaging 40% of normal (p less than 0.001) while Ig A and Ig M did not show much change. The Ig G values increased after treatment with prednisolone but the mean value remained low after 4 weeks of therapy while the children were in remission. There was significantly low T-lymphocyte counts and poor response to PPD challenge suggesting depressed cellular immunity in these patients. The low Ig G level was attributed to loss through urine as well as a T-cell dependent Ig G synthesis defect. After 4 weeks, 76% responded to steroids. Low serum Ig G and high proteinuria selectivity index were some of the contributing factors for the poor response of the patient to steroids.

STA/04. DISTURBANCES OF BLOOD COAGULATION IN ENTERIC FEVER

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Sixty three cases of enteric fever in pediatric age group diagnosed by clinical picture, blood culture and/or widal test were studied to evaluate coagulation profile. There were 38 males and 25 females with M:F ratio of 1.52. Thirty cases (47.6%) were blood culture positive while thirty three cases (52.4%) were widal positive and blood culture negative. Coagulation profile was normal in 47 cases (74.6%) while sixteen cases had derangement of coagulation profile of which eleven had subclinical derangement while in five cases it was associated with bleeding manifestations. Subclinical DIC was more common (12.6%) as compared to clinical DIC (7.9%) and the total incidence of DIC was 20.5%. DIC was more common in patients with complications i.e. severe typhoid and was associated with high mortality. Bleeding manifestations were seen 8 (13%) cases and correlation was found between bleeding manifestation and abnormal coagulation test.

STA/05. SEROLOGICAL RESPONSES TO HEPATITIS B VIRUS INFECTION IN MULTI-TRANSFUSED THALASSEMIC CHILDREN

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The aim of this study was to determine the frequency of Hepatitis B virus (HBV) infection and to analyze the serological profiles in response to this infection in multi-transfused thalassemic children. One hundred children with beta-thalassemia major were studied prospectively. These patients had been receiving blood transfusions for a variable period of 6 months to 11 years. None of them had been administered hepatitis B vaccine or immunoglobulin. Twenty four children had received less than 20 transfusions, whilst 49 had received over 50 transfusions. A one time analysis of serum samples was carried out for a battery of hepatitis B viral markers namely hepatitis B surface antigen (Hbsag), hepatitis B e antigen (HBeAg), antibody to hepatitis B surface antigen (anti-Hbs) and antibody to Hepatitis B core antigen (anti-HBc).

Seropositivity for one or more of the viral markers was detected in 76 children. Seven mutually different serological patterns were observed. The commonest profile seen in 9 patients was a combined seropositivity for anti Hbc and anti-Hbs indicating past HBV infection with persisting immunity. Definite evidence of active HBV infection (seropositivity for Hbsag and/or Hbeag) was demonstrated in 10 cases, six of these were Hbsag positive. Anti-Hbc positivity alone was detected in 17 patients. The remaining 24 children were seropositive for anti-Hbs alone suggesting a possible passive transmission of anti-Hbs through blood transfusion.

Hepatitis B virus infection thus remains a significant transfusion related complication in our country. Testing of sequential specimens is helpful in monitoring the course of infection and the degree of infectivity. When a serum sample is available only at one point, diagnostic sensitivity and accuracy are improved by seroanalysis for a complete set of HBV markers. Analysis of the serological profile also provides useful clues to interpreting the course of the disease and the level of infectivity. In this study, seroanalysis for Hbsag alone would have detected just 6 children with HBV infection. However, with the use of multiple serological markers, 10 cases were demonstrated to have active viral infection and another 17 had a probable active infection. Further the serological evidence of exposure to HBV infection was detected in 76 children. This high prevalence of past or active HBV infection in our study emphasizes the need for vaccinating all children at the time of induction into the thalassemia transfusion programme. Moreover, since the significant proportion have active HBV infection and constitute a potential source for horizontal transmission, the vaccination programme could be extended to the close family contacts and the health personnel involved in their care.

STA/06. CEREBRAL MALARIA : CLINICAL FEATURES AND THERAPEUTIC OUTCOME OF 50 CASES

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In the present prospective study, 50 cases of cerebral malaria were studied for their clinical features and response to therapy. P. falciparum accounted for 44 (88%) cases while 6 (12%) were caused by P. vivax. Majority of children were in the age group of 5-12 yrs, 32 (64%),

rest 18 (36%) were in the age group of 2-5 yrs. Altered sensorium 49 (98%), fever in 47 (94%), convulsion 37 (74%), vomiting 26 (52%), headache 22 (44%) were the main clinical features. Positive neurological findings were Macewan's sign 32 (64%), Hemiplegia/Monoplegia 5 (10%), cranial nerve palsy in 3 (6%), cerebellar sign 1 (2%) and fundal changes were seen in 3 (6%).

Very heavy parasitemia was detected in 10 (20%), heavy parasitemia 12 (24%), moderate in 11 (22%) and scanty in 17 (34%). Severe anaemia was observed in 11 (22%), mild and moderate in 25 (50%). Hypoglycemia in 8 (16%), abnormal C.S.F. findings in 11 (22%) and abnormal L.F.T. in 2 (4%).

Overall mortality in the study was 16 (32%) out of which 75% deaths were due to P. falciparum infection, rest 25% due to P. vivax. Children with malnutrition had poorer prognosis as compared to well nourished children. Patients with associated severe anaemia had significant higher mortality. Definite association between increased mortality and delayed treatment was seen. Degree of parasitemia did not correlate with mortality in present study.

SSM/01. SERUM FRUCTOSAMINE: A SCREENING TEST TO DETECT INFANTS OF DIABETIC MOTHERS AMONG LARGE FOR GESTATIONAL AGE BABIES

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Simultaneous measurement of serum fructosamine and blood glucose were done in three groups of babies; 20 normal weight babies (Group A), 30 large for gestational age babies more than 3.5 Kgs. (Group B), and 12 babies born to known diabetic mothers (Group C); the corresponding maternal blood was also collected. The mean serum fructosamine level for the babies was 1.53 mmols/1 (+(-) 0.17 SD) and the corresponding mean maternal serum fructosamine level was 1.76 mmols/1 (+(-) 0.18 SD) in Group A babies. Ten out of thirty (33%) Group B babies had elevated serum fructosamine levels (more than 2 SD) and in all their mothers serum fructosamine was also elevated. All the Group C babies also had increased serum fructosamine levels in maternal as well as cord blood. There was a good correlation between babies serum fructosamine and maternal serum fructosamine levels. (Group A) r=0.49618, Group B r=0.73697, Group C r=0.7821 (p value less than 0.05 in all Groups).

Blood glucose values were increased in a lesser proportion of Large for gestational age babies 4/30 in Group B and 3/12 in Group C.

Our findings suggest that serum fructosamine is a better marker for diagnosis of Infants of Diabetic mothers among large for gestational age babies. It is also a simple, fully automated, and inexpensive test.

SSM/02. EFFECT OF ROOMING-IN ON THE GROWTH OF LOW BIRTH WEIGHT BABIES - A RANDOMIZED, PROSPECTIVE, CONTROLLED STUDY

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A prospective study was conducted on 60 uncomplicated low birth weight babies (between 1300 and 2000 gms) by randomly distributing them into the study and control group. Practice of rooming in with total care by the mother was allowed for the study group whereas control groups babies were kept separate in special care unit with mothers allowed in only for breast feeding. Gestation and maternal educational

status were the controlled variables kept similar in the two groups.

Growth in terms of increments of weight, length and head circumference was measured during hospitalization and thereafter till the age of six weeks. Incidence of breast feeding, feed aspiration and infections was also noted in the two groups. Statistical significance of results was determined by unpaired t tests, tests of proportion and Yule's coefficient of association.

The babies in the roomed-in group showed significantly higher increments in all three growth parameters ($p<.001$). Incidence of exclusive breastfeeding was significantly higher in the study group (24/30) as compared to control group (15/30). Lower number of episodes of infection were seen in the study group (16) as compared to control group (28) ($p<.001$). Rooming-in was found to be a factor which was associated with higher incidence of breastfeeding which in turn determined freedom from infection.

SSM/03. MEASUREMENT OF VENTRICULAR SIZE IN TERM AND PRETERM INFANTS

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Real time ultrasonography was done in neonates to establish the norms for ventricular size and to see if there is a correlation between ventricle size and gestational age (AGA & SGA). It was also decided to assess relationship between various indices. 153 normal infants admitted to our nursery after Sept'89 were taken up for the study. 1st ultrasound was performed within six days of birth. Sonography was done with 3.5 Mhz transducer through anterior and lateral fontanelle. Results revealed there is a significant difference in the mean value of FC, VI, Ratio (VI/FC) C, FM and VM of preterm and term infants. The ventricular size of SGA infants is significantly different from AGA infant of corresponding gestational ages. the percentile chart of VI for Indian infant is comparable to that of western infants.

SSM/04. VEGETABLE OIL (P.U.F.A.) SUPPLEMENTATION IN FEEDING OF PRETERM LOW BIRTH WEIGHT BABIES

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In fifty preterm low birth weight babies (gestational age 27-36 weeks and body weight 850 gm - 2.4 kg) beneficial effect of 1-2 ml/kg/day vegetable oil (Polyunsaturated Fatty Acids) as caloric supplement studied. We made two groups A and B (25 babies each). Total 36 male and 14 female babies. Both groups (A & B) were receiving formula milk about 120 +(-) 80 ml/kg/day, of similar caloric density, except that group B had supplementation of vegatable oil. Maximum protein intake was limited to 2.25 - 3.75 gm/kg/day (10% of total calories) and excessive carbohydrates avoided to prevent hyperosmolarity of milk.

Most of the babies of gr.B, regained birth weight in 2nd week but 3 +(-) 1.5 days earlier than group A. Daily weight gain was 5- 30% more in group B than babies of gr. A. Vegetable oil (PUFA) was better tolerated without causing distension of abdomen or much fecal fat loss.

Increased rate of weight gain after vegetable oil (PUFA) supplementation reduced expensive hospital stay and the rate of complications in preterm low birth weight babies.

SSM/05. COMPARISON OF MIDARM CIRCUMFERENCE/ HEAD CIRCUMFERENCE RATIO AND PONDERAL INDEX FOR DETECTION OF METABOLIC COMPLICATIONS IN NEONATES WITH ABNORMAL INTRAUTERINE GROWTH

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The accuracy of Ponderal Index (PI) and the Mid arm circumferenc / Head circumference (MAC/HC) ratio was studied for detecting newborn infants who were likely to be symptomatic because of abnormal intrauterine growth. Sixty infants with suspected intrauterine growth retardation were evaluated. The PI was insignificant and MAC/HC ratio was significantly lower in a group of 30 symptomatic infants than a group of 30 asymptomatic infants ($p<0.05$). The MAC/HC ratio identified significantly higher percentage of symptomatic infants than PI (76.6% vs 46.7%); $p<0.02$). Sixty infants with suspected intrauterine growth acceleration were also evaluated. The MAC/HC but not the PI was significantly higher in 30 symptomatic infants than 30 asymptomatic infants ($p<0.05$). Again MAC/HC identified significantly higher percentage of symptomatic infants than PI (83.3% vs 36.7%; $p<0.001$). The MAC/HC ratio is more accurate than PI (83.3% vs 36.7%; $p<0.001$). The MAC/HC ratio is more accurate than PI for prediction of potentially symptomatic newborn infants who suffered aberrant intrauterine growth.

SSM/06. FOLLOW UP OF NEURODEVELOPMENT OF HIGH RISK NEWBORNS - AN INTEGRATED NEW APPROACH

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A prospective study of neurodevelopment of high risk babies was undertaken upto the age of 12 months. Follow up of the high risk babies from the NSCU, through infancy, was done by the same team of Neonatologists, Occupational therapist and Social worker. Two methods of neurological assessment were combined and done simultaneously at 3, 6, 9 and 12 months. The Amiel-Tison method was used for diagnosis and the Ramm's method for planning interventional therapy. 111 babies, out of which 43 were full terms and 68 were preterms, completed all 4 testings. 12 normal controls were followed up in a similar manner. When persistent abnormality was noted on the basis of the 2 assessments, therapy in the form of a home training programme or at the hospital was offered, depending on the severity. 8.1% of babies showed developmental delay at 12 months. This was confirmed by a testing on Bayley Scales of Infant Development. Full term babies normalized earlier than preterms and this difference was statistically significant at 6, 9 and 12 months. Generalized hypertonia with developmental delay had a bad prognosis. Minor tone abnormalities were of no significance. Babies who followed interventional therapy regularly, did far better than those who did not. This difference was statistically significant ($p<0.05$). The predictive value of the 3 month assessment for final outcome at 12 months was high (93.8%). The incidence of permanent handicap in the form of cerebral palsy was 2.7%.

SSM/07. COMMON SALT (SODIUM CHLORIDE) ERADICATES CORD SEPSIS

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In India 42% mothers do not get tetanus toxoid. 67% of deliveries are conducted by untrained persons unaware of asepsis. Majority deliver in homes, rural areas and in jungles where expen-

sive antiseptics, drugs and medical care are not available. So cord sepsis is rampant and often leads to tetanus neonatorum, India's 7th largest infant killer or septicaemia a universal major killer. A universally available antiseptic used locally can reduce cord sepsis. This fact necessitated the search for an antiseptic which would be 1) available in every household, 2) be cheap, 3) easy to use, and 4) socially acceptable. This resulted in discovery of household, unsterilized powdered common salt having all these properties.

Common salt destroys umbilical granuloma. It has staphylococci which cannot infect the umbilicus in presence of excess of salt. Ayurveda describes common salt as antiseptic and Microbiology describes salts as germicidal. Dead sea is called as dead sea as nothing survives in its 30% salt concentration. Salt preserves pickles, fishes & mummies preventing its decay by organisms. It was hypothesized that a cord covered with salt will be preserved till it falls naturally. No organism would survive to infect it. Thus, cord sepsis and subsequent tetanus neonatorum would be prevented.

In vitro experiments confirmed that 1) salt is germicidal 2) salt mummifies and preserves a cut piece of cord.

In vivo studies: 1) 25 umbilical granulomas were uneventfully treated by sprinkling common salt. 2) Daily dressing of cords of all newborns with salt contributed to eradication of nursery epidemic of cord sepsis. This led to uncontrolled study of common salt as an antiseptic for cord in 157 babies at two centres. Similar prospective multicentric controlled study is going on. Till today 310 babies have been studied as follows. 1) 150 in salt group 2) 111 in control group C-I where no antiseptic is used in maternity home for first 3-5 days but is advised on discharge. 3) 49 in control group C-II where a local antiseptic is used daily after birth.

It was observed that babies from salt group had no problem. Neither cord sepsis nor granuloma. In control group C-II, none had cord sepsis but 4 had umbilical granulomas. All granulomas disappeared on sprinkling common salt, the antiseptic of study group. There was no case of cord sepsis in salt group and in control group C-II where salt or some other antiseptic was used daily. 2 cases of cord sepsis occurred in control group C-I where no antiseptic was used for first 3 to 5 days.

Thus, this study concluded that 1) Local antiseptic reduces cord sepsis and is a must for every newborn. 2) common salt is at least as good as any other local antiseptic 3) common salt prevents and treats umbilical granulomas and hence is superior to other antiseptics. 4) common salt is a safe, 100% effective, most economical, least toxic antiseptic available in every household when needed. It is one appropriate technological solution to reduce India's high infant mortality.

SSM/08. DOES CORD BLOOD ACIDOSIS IN NORMAL AND MILDLY ASPHYXIATED NEONATES CORRECT SPONTANEOUSLY: GUIDELINES FOR SODIUM BICARBONATE THERAPY

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Acidosis in the cord arterial blood is considered as a reliable biochemical sign of fetal compromise sometime during/before delivery 1. A low bicarbonate value has been taken as a marker of chronic fetal stress while low Ph along with high pCO2 and normal base excess has been suggested to be an indicator of acute respiratory stress during labor 2. It is also realized that Apgar score is a poor predictor of biochemical acidosis at birth. Further, a considerably large proportion of normal babies (Apgar>7, vigorous, active) have been found to have low Ph and significant base excess 3.

In the advanced centres of neonatal and obstetric care it is recommended that sodium bicarbonate should be administered slowly in a small dose at birth as a resuscitative measure if there is severe birth asphyxia. Further correction of acidosis is based on the acid-base-gas (ABG) analysis which are routinely obtained in such centres4. However, the policy regarding sodium bicarbonate therapy is not so clear in cases of mild birth asphyxia/ no asphyxia with significant acidosis in cord blood. One logical course of action in such cases would be to repeat the ABG analysis (e.g. from radial artery) after a few hours of birth. If acidosis is not reversing sodium bicarbonate therapy may be indicated. We undertook this study with the objective of finding our the proportion of babies with cord blood acidosis but normal or mildly low apgar score who cannot spontaneously (without administration of sodium bicarbonate) correct their acidosis and to attempt to identify such babies on the basis of clinical criteria. These criteria can then be used as a guide for sodium bicarbonate therapy in such infants in centres where facilities for ABG analysis are not available.

VBR/01. CRANIAL SONOGRAPHY IN PYOGENIC MENINGITIS IN NEONATES AND INFANTS

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Cranial Sonography was performed in 34 patients (Neonates and Infants) of proven Meningitis and with clinical suspicion of its complications, utilizing the patent anterior fontanelle. The spectrum of sonographic features of meningitis included normal scans (9 patients), ventriculomegaly (16 patients), echogenic sulci (14 patients), subdural effusion (Extra Axial Fluid collections) - 6 patients, ventriculitis (3 patients), infarction / cerebritis / cerebral edema (3 patients), porencephalic cyst (2 patients) and localization of tip of shunt in ventricle (1 case). A correlation between the sonography findings and clinical features and neurologic outcome on 4 weeks - 6 months follow-up was studied. Findings of abnormal parenchymal echogenecity and/or moderate ventriculomegaly and ventriculitis were associated with significant neurologic sequelae, however, echogenic sulci and small extra-Axial fluid collections did not appear to have any prognostic significance. Cranial sonography has an accuracy comparable to computed tomography. Cranial sonography is safe, and cost effective and is an ideal imaging modality for early detection of complications and follow-up of cases of meningitis and to monitor the progress of treatment of these patients.

VBR/02. A NEW VISUAL CULTURE APPROPRIATE CHART FOR DEVELOPMENTAL SCREENING OF URBAN AND RURAL CHILDREN 0-6 YEARS

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Based on the results of the culture appropriate Psycho Social tests applied to 1200 Urban and 800 Rural children a new visual screening record has been constructed which allows a rapid visual comparison of the child's achievement with his peers and his own previous attainment. Definite criterion are laid down for 'Pass' and 'Fail' of a test item and also for 'delayed' and 'suspect' performance of the children. A threshold line is drawn arbitrarily to establish a referral point developed partly from western experiences and partly from the extrapolation of the percentile charts used for early detection of malnutrition in developing countries. It is a simple, quick and inexpensive way of screening the whole population. The normal child is expected to 'pass' the 50th centile of an item appropriate for his age (step age). Failure to

pass the age appropriate test item at the 50th centile can be labelled as 'suspect' or 'abnormal' depending upon the placement of the achievement of the child in relation to the threshold line.

Owing to the experimental nature of the culture appropriate Psycho-Social Test Battery used for developmental assessment gaps have appeared in the percentile charts. These are largely due to the inadequate number of test items in the fields tested. Since developmental maturation closely overlaps the various fields of development it seems judicious that the child's full developmental profile be studied carefully to pick up early discrepancies in behavior.

Since early intervention (before 2 years) has shown to improve a child's prognosis for functional adaption it is recommended that screening be done more frequently in the first two years of life.

Search for potential risk factors led to the identification of income as the most important factors influencing development in a negative way. All other factors identified were directly or indirectly related to income. A home screening using family interview protocols is recommended to screen high risk populations and all 'suspect' or 'Delayed' cases.

Because the charts are drawn from percentiles of achievements tested on a representative Urban & Rural population it can with some modifications be used profitably in all parts of the country. Further, the tests used are short, simple and can be administered and scored in 5 minutes by minimally trained workers. Family and community members and para medical workers will find the chart easy to understand and implement. It's use is recommended on a nationwide basis to screen all children in a cost effective manner.

VBR/03. A CLINICAL AND BACTERIOLOGICAL STUDY OF NEONATAL PNEUMONIA

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In a prospective study of 44 neonates (33 outborn and 11 inborn) with pneumonia, the bacteriology of pneumonia was determined by blood culture and serum countercurrentimmunoelectrophoresis (CIEP). Twenty-nine babies also underwent lung aspiration. The lung aspirate was subjected to bacterial antigens of Streptococcus pneumoniae and Hemophilus influenzae. Absence of tachypnoea was a grave prognostic sign. It was found more commonly in low birth weight infants. Low birth weight babies had a significantly higher mortality than babies with normal birth weight. Altogether a bacterial etiology of neonatal pneumonia could be established in 25 cases (56.7%). In 10 babies, streptococcus pneumoniae antigen was detected from lung aspirate and/or serum. Microorganisms were cultured from blood and/or lung aspirates in 17 babies. Eleven babies (25%) grew gram negative bacteria. The bacteria identified in decreasing order of frequency were Streptococcus pneumoniae. Klebsiella pneumoniae, Staphylococcus epidermidis, Aunatobacter lawfil staphylococcus aureus, Pseudomonas aeruginosa, Streptococcus species, Escherichia coli, salmonella group E, Salmonella typhimurium Morganella morgagni, Enterobacter and coagulase negative staphylococcus etc. Out of bacteria grown from 17 patients, 52.9% were resistant to ampicillin and 76.5% was resistant to gentamicin. All the isolated gram negative bacteria were sensitive to amikacin. In view of the above the initial antimicrobial therapy in neonatal pneumonia should include crystalline penicillin, an aminoglycoside antibiotics (Amikacin in our setting) and cloxacillin.

VBR/04. SALIVARY IRON STATUS IN CHILDREN WITH IRON DEFICIENCY AND IRON OVERLOAD

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Forty anemic (iron deficiency anemia-27, thalassemia major-8 and aplastic anemia-5) and 10 non-anemic children (served as controls) aged 8 months to 10 years were selected for the study. Hematocrit, hemoglobin and iron levels in serum and saliva were estimated in all the cases and additional serum albumin, serum protein and salivary protein were estimated only in cases of iron eficiency anemia. The salivary iron was significantly higher both in iron deficient as well as iron overload conditions. The mean salivary/serum iron ratio was unchanged in iron overload cases, and 2 fold higher in iron deficient anemic children as compared to controls. The correlation between salivary iron and serum iron was highly significant ($r=0.7392$, $P<0.001$). The iron deficient anemic children with hypoalbuminemia had significantly reduced serum and salivary protein ($P<0.001$) but iron concentrations in serum and saliva remained unaltered. The salivary protein level had significant correlations with serum albumin and serum protein ($p<0.001$). Thus, the iron in saliva is maintained at a higher level and more so in iron deficiency anemia, it correlates well with serum iron ($r=0.6853$, $P<0.001$) and does not affected by coexisting hypoproteinemic situation.

VBR/05. UNCHECKED ORS COMMERCIALIZATION - A ROAD TO DISASTER ?

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Locally available commercial preparations of oral rehydration solutions (ORS) were investigated for their composition, package instructions and availability. On enquiry made at 50 chemist stores, it was found that ORS packets available in the market belonged to 28 different pharmaceutical companies. None of the shops stored more than five different types of preparation and alternate preparation were handed over the counter freely.

Only 48% of available ORS formulations have WHO recommended composition. In about one-fourth preparations sodium concentration is 30 Meq or less per litre. 41% solutions have glucose concentrations more than 2%. Glucose and sodium ratio of 1:1 was maintained in only 48% of formulae. Bicarbonate and citrate both have been used with almost equal frequency in these preparations. Cost, flavour, additional ingredients and package instructions varied widely in different packets. ORS formulations most commonly found in the drug stores have low sodium and high glucose concentration.

Attitude of doctors and nurses of paediatric department and chemists towards commercial ORS was also studied. While 92% of doctors were aware about WHO-ORS, none of the chemists and only 4% nurses have this awareness. All the interviewees could remember only upto 3 or 4 brand names and except 30% doctors none were aware about the composition of those brands of ORS. Regarding importance of composition, preparations and precautions, practically nobody was upto the mark, but doctors were definitely better as compared to nurses and chemists ($p<0.001$).

It is concluded that very few brands completely adhere to the WHO formulation and variability in contents is frequent, sometimes reaching dangerous proportions. The knowledge, attitude and perception of various prescribers (including qualified doctors) and dispensers on this topic is appalling. The need for urgent remedial action is obvious.

GROWTH & DEVELOPMENT

*GD/01. AN INDEX FOR THE EVALUATION OF GROWTH PATTERNS IN CHILDREN

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The relationship of rate of growth and adequacy of body development to physical fitness has been widely recognized. The comparison of physical measurements of a given child with those of other healthy children has been a standard way of measuring and evaluating the growth of the child. However, it has been found difficult to select truly representative figures of measurements in children because generally the standards becomes out of date very soon. What is needed, therefore, is the construction of some type of Index which remain independent of time. In other words, a quantity giving the measurement of growth in absolute terms should be used. The height - weight indices though most widely used, are open to number of criticism, most important being that the growth of human body is not linear (Growth is three dimensional) and therefore height alone is not a suitable measure for the relative increase in the size of the body. In absence of any reliable index for the measurement of growth, it is desirable to go deeper into the different aspects of growth and try to construct a reliable index for the measurement. This, in summary, is what this paper aims at.

A suitable criteria for the measurement of growth is the body build of the child, and the best measure for body build is the weight per unit volume of the body. But, the major problem in using the above weight per unit volume criterion is the measurement of volume of the body. One method suggested is the water replaced by the body while floating. Incidently, this is the most accurate method for the measurement of volume, but on the other hand, it is much too subjective in nature, and therefore cannot be used in large scale surveys and in field trials.

In this paper, we have suggested an index for the measurement of growth. The principal of this index (proved by mathematical theory) is "Ratio of the Weight to the Product of the height and square of the chest circumference of the Body is proportional to the weight per unit volume of the body." which gives us a measure of the body build and therefore that the growth of the body in absolute terms. Hence the index is:

$$I = \frac{W \text{ in grams}}{H.C2}$$

W = weight in grams
H = height in cms
C = chest circumference in cms

In order to test the reliability and validity of the index, the same was applied on the data obtained from 330 children randomly picked up from paediatric wards and O.P.D. between the age of 1 & 6 years, and we found that the range of index for the normal growing children is .05 to .06.

The brightest feature of the index is its stability over both between and within age (proved by very low value of S.D. i.e. 0.004330 - 004941).

The approximately equal values of S.D. in all age groups show that the distribution of index over age is nearly the same. In other words, it implies that the index is practically independent on age.

The other important feature of this index is that it can be used in cross-sectional as well as longitudinal studies (i.e. more important) of growth.

GD/02. ANTHROPOMETRIC INDICES IN CHILDREN BETWEEN AGE GROUP 2-10 YEARS

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Children are important in the determination of a nation's health. Anthropometry is a simple and reliable means of assessing the growth status, and detecting abnormalities at a subclinical level. It is useful to develop local standards, for comparison with national and international standards, and to serve as a target to be achieved by all children. Taking this into consideration, the present study was undertaken in children residing in the Poona Cantonment area.

Material and Methods:

A cross sectional study was carried out in 1080 apparently healthy children of the military and civil population between the ages of 2-10 years. The per capita income of the families was more than Rs.500/- per month. The age was calculated from the date of birth, and recorded in completed years. The parameters studied were height, weight, head circumference, MAC and chest circumference. The data were analyzed and compared with ICMR, Harvard and NCHS standards.

Observations:

There were 545 (50.46%) boys and 535 (49.54%) girls. The percentage of children of military and civil population was 51.39% and 48.61% respectively. The height was 86.99 +(-) 3.66 cms in boys, and 85.28 +(-) 4.09 cms in girls at 2 years which increased to 137.47 +(-) 7.12 and 137.72 +(-) 7.16 cms at 10 years in boys and girls respectively. The increment in weight from 2-10 years was 11.91 +(-) 1.47 to 32.52 +(-) 6.80 kg in boys and from 11.16 +(-) 1.50 to 32.60 +(-) 6.80 kg in boys from 11.16 +(-) 1.50 to 32.60 +(-) 7.47 kg in girls. The head circumference of 48.20 +(-) 1.63 cms and 46.74 +(-) 1.36 cms in boys and girls at 2 years increased to 52.00 +(-) 1.40 and 52.20 +(-) 1.36 cms at 10 years respectively. The MAC increased from 16.39 +(-) 0.51 to 19.43 +(-) 2.18 cms in boys and from 16.29 +(-) 0.43 to 19.72 +(-) 2.35 cms in girls from 2-10 years. The chest circumference ranged from 49.29 +(-) 2.50 cms to 61.66 +(-) 1.72 cms in boys and 48.02 +(-) 2.27 to 61.76 +(-) 1.99 cms in girls from 2-10 years.

All the anthropometric measurements showed higher values in boys till the age of 9 years, after which the girls overtook the boys at the age of 10 years, thus indicating the onset of a definite growth spurt after the age of 9 years in girls. The observed values for various measurements in our study were higher than those of ICMR, but lower than those of Harvard and NCHS standards. Socioeconomic class gradient explains the difference. No statistically significant difference was observed in the mean values of anthropometric measurements in children of military population compared to those of civil population. This is because the children of both groups belonged to same socio-economic class. This may suggest that geographic and ethnic heterogeneity has little effect on physical development of children, and may support the hypothesis that environment is a major determinant of physical growth.

GD/03. A LONGITUDINAL STUDY OF MOTOR DEVELOPMENT FROM BIRTH TO 18 MONTHS OF AGE AND ITS RELATION TO PHYSICAL GROWTH, NUTRITION AND ILLNESS

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Development forms one of the criteria for assessment of physiological maturity in children. Tanner has emphasized the need for the assessment of the motor development in a multidisciplinary longitudinal study of growth and development.

This forms part of multifaceted longitudinal study of growth and development of a cohort of children in a low socio-economic Bengalee Hindu children from birth to 18 months of age in urban areas of Calcutta. Two hundred & seventy nine children were initially registered ;156 remained at 18 months of age. The anthropometric measurements e.g. weight, length, stem length, chest, cranial and mid arm circumference were done at 14 +(-) 2 days interval.

For the assessment of motor development, the guidelines by Illingworth (1963) on 'The average level of development at different ages' were followed. Complete head control was observed in 42.35% of boys and 56.58% in girls between 84 - 112 days of age.

Sitting with support was observed 76.32% in boys and 77.78% in girls at 168 days of age.

Crawling: 75% of boys and 50% of girls could crawl at 280 days of age.

Standing with help was achieved by 252 days of age by 64.18% of boys and 51.28% of girls.

As regards standing without help, 24% of boys and 60.06% of girls achieved this at 280 days.

Walking with help was achieved in 62.5% of boys and 72.15% of girls of 336 days.

As regards walking without help, 60% of boys and 50% of girls achieved this at 15 months of age.

Climbing stairs: At 18 months, 65% of boys and 55% of girls could climb stairs with help.

The overall increment in weight of all the children from birth till 18 months of age were fitted with the regression line. The highest and the least weight gain group were taken into consideration for the assessment of effect of nutrition and illness. There were 16 children in each group.

Different motor developmental landmarks at stated ages were analyzed for both the groups. The greatest weight gain group of children had better and optimal gain in motor development, and their nutrition was adequate and illnesses were less frequent as opposed to retarded motor development, inadequate nutrition and more illnesses in the least weight gain group. The differences were statistically significant.

NUTRITION

*NUT/01. BLINDING MALNUTRITION - A CLINICAL & BIOCHEMICAL STUDY

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A prospective study of 50 xerophthalmic children versus 15 Non-xerophthalmic children was undertaken. The aim of study was to estimate the serum vitamin A levels, and correlate it clinically to the eye manifestations, underlying malnutrition status and the mortality of the children. The modified Neeld - Pearson method was used to measure the serum vitamin A. Xerophthalmia was clinically classified as per the IAP classification. The total number of PEM cases were 82, 62% of them had varying degrees of xerophthalmia.

The observations were

1. Serum Vitamin A level correlated proportionately with the severity of xerophthalmia, 22.43 mcg% was in non-xerophthalmic, and 13.04 mcg% in xerophthalmic children. X1 A - 15.94 mcg%, X1 B - 14.85 mcg%, X2 - 9.87 mcg% and X3 - 6.44 mcg%.

2. The incidence of xerophthalmia increased with the severity of PEM - Gr. I 33.3%, Gr. II 61.9%, Gr. III - 65%, Gr. IV 73%.

3. Gr. III/IV PEM proportionately increased with the severity of xerophthalmia - X1 A - 41.6%, X1 B - 54.5%, X2 - 88.8%, X3 - 100%.

4. Of the 4 cases who expired (4/50 i.e. 8%) all hadkeratomalacia.

Thus, it is obvious from this study that there is a causal relationship between the Vitamin A Status and Systemic Morbidity and Mortality of PEM.

*NUT/02. A 7 YEAR, FOLLOW-UP STUDY IN SURVIVORS OF PROTEIN ENERGY MALNUTRITION

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A follow up study was carried out in 100 severely malnourished children who were admitted and discharged 3-7 years ago from the Nutritional rehabilitation Centre attached to the Department of Pediatrics, J. J. M. Medical College, Davangere. All the 100 children in study group showed significant improvement in 'weight for age' at follow-up. When 'Height for age' was compared, significant number of children in the study group showed retardation in height. When these children were compared with their siblings, brought up in the same socio-economic conditions, but not having suffered from severe protein energy malnutrition, it was found that the children in the study group had far outgrown their siblings. When IQ's were assessed in children discharged 7 years back, only 8.3% of children had normal IQ's. Plain x-ray abdomen taken in 28 children (who had completed 7 years follow-up) did not reveal any pancreatic calcification. When knowledge, attitude and practices were assessed among 55 mothers of study group, they had retained better knowledge, attitude and practices when compared to that at the time of admission.

*NUT/03. VITAMIN 'A' DEFICIENCY, PROTEIN CALORIE MALNUTRITION AND INFECTION

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Eyes have been considered as the King of the human organ for their function of vision, expression and beauty. Their function is affected most commonly by deficiency of Vit. 'A', which is one of the major preventable cause of blindness. There is a significant association of Vit. 'A' deficiency with malnutrition, infection and infestation. Therefore, this study was undertaken to evaluate the pattern of Vit 'A' deficiency in malnourished children, possible predisposing factors and correlation between clinical signs and biochemical parameters.

The study included 100 children with various signs of Vit 'A' deficiency, out of which 80 children were malnourished and 20 had a normal nutritional status.

A statistically significant low serum Vit. 'A' level 10.55 +(-) 5.20 was observed in children of Grade IV Malnutrition, compared to normally nourished 15.64 +(-) 1.91 ($p<0.001$). (All values in microgram/dl).

Children with acute infectious diseases, especially Measles, Respiratory tract infections (other than measles) and Acute Gastroenteritis, had low Serum Vit. 'A' levels 9.86 +(-) 2.61, 11.12 +(-) 4.13 and 11.95 +(-) 4.72 respectively compared to those without infections 13.23 +(-) 4.01 ($p<0.05$).

Low Serum Vit. 'A' level 10.85 +(-) 4.64 was observed in children with parasitic infestations than those without infestations 12.99 +(-) 3.60 ($p<00.02$).

In severe forms of Vit. 'A' deficiency like corneal ulcers and Keratomalacia, the Serum Vit. 'A' level was found to be low.

Thus, Protein energy malnutrition, Measles, respiratory tract infection, Acute Gastroenteritis and Worm infestations, precipitate or predispose to Vit. 'A' deficiency and significantly correlate with Serum Vit. 'A' levels. Hence, all these children should receive Vit. 'A' prophylaxis. "VISION BY VEGETABLE" is the easiest, cheapest and surest way to prevent Xerophthalmia.

NUT/04. PATTERN OF NUTRITIONAL DEFICIENCY DISORDERS IN URBAN AND RURAL PRESCHOOL AND SCHOOL GOING CHILDREN OF MEERUT

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This study was carried out in the Dept. of Pediatrics, SVBP Hospital, LLRM Medical College, Meerut. School going children from two schools in Meerut City and three schools from a village Rachhoti, 22 Kms from Meerut, 4 Kms off the Lucknow Road, were examined. Preschool children below 5 years of age, attending the "well baby clinic", in the department of Pediatrics, SVBP Hospital, Meerut were also included in the study. A total of 1857 children between 1-18 years were studied. Detailed history was taken and thorough examination done of each child, with particular emphasis on nutritional deficiency disorders. Pallor was seen in 30.26% cases, more in rural children and in females. Vit.A deficiency was seen in the form of night blindness (1.67%), conjunctival xerosis (5.98%) and bitot spots (0.38%) Vitamin B complex deficiency in form of angular stomatitis was seen in 2.1%, cheilosis in 1.51% and glossitis in 0.86% cases. Vitamin C deficiency was seen in 0.2% urban and 0.94% rural children. Vitamin D deficiency was seen

in 6.03% children. Overall 4.47% children had dyspigmented hair and 3.6% had thin and sparse hair. It was observed that the nutritional deficiencies were present more in rural children.

NUT/05. INFECTION IN PROTEIN CALORIE MALNUTRITION

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A total number of 164 children in the age group between 0-12 years with protein caloric malnutrition were taken for the study, to analyze the associated infection in them, from the Nutrition Clinic of the Dept. of Pediatrics, The North Eastern Regional Medical College, P. O. Imphal, Manipur State, India during the period from July 1987 to December 1989. Based on the Welcome classification the clinical assessment of the protein calorie malnutrition was carried out depending on the deficit of the body weight, along with whether edema was present or not. Out of the total number of 164 children, 54 (32.9%) had marasmus, 91 (55.6%) had marasmic kwashiorkor, and 19 (11.5%) had kwashiorkor. 42(25.6%) children were from the lower socio-economic group, with the family income not more than Rs.1000/- per month, and 122(74.4%) ones were from the comparatively higher socio-economic group with the family income more than Rs.1000/- per month ($p<.001$). 43(26.2%) patients and 121(73.8%) patients hailed from the urban and rural areas respectively ($p<.001$). 60(36.5%) children came from families each of which had 5 or less members in the family, and 104(63.5%) children came from the families each of which had more than 5 members in the family ($p<.001$). 25(45.7%) belonged to the families each of which had a total number of 3 or less children in the family, and 89(54.3%) belonged to the families each of which had a total number of more than 3 children in the individual families ($p>.05$). In the study group only 14 (8.5%) children were immunized against tuberculosis showing, thereby the poor immunization status.

Out of the total number of 164 children, 61(37.2%) had gastroenteritis, 42(25.6%) had primary complexes, 32 (19.5%) had non-tuberculous pulmonary infection, 14 (8.5%) had worm infestation, 11(6.7%) had measles and 5(3.1%) had whooping cough.

R.K. Chandra et al extensively studied the relationship between the malnutrition and infection (1977). Vijay Kumar et al pointed out the fact that the combined effect of food restriction and energy losses during illness probably plays an important role in causation of PEM amongst the children (1981). The overall raising of the Socio-economic status, quantity and quality of food supply, and the making good use of the family welfare services and the low cost means including the locally available food, nutrition and health education and health check-up of the ailing children and its proper and timely intervention will break the interlinking between the malnutrition and infection, and it is one of the major strategies of fighting both menacing diseases of the vicious cycle through the concerted multidisciplinary approach.

NUT/06. BLOOD ASCORBATE LEVEL IN MALNOURISHED CHILDREN SUFFERING FROM ACUTE INFECTIONS

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Blood Ascorbic levels were estimated in 77 Malnourished children suffering from acute infections and 25 age matched healthy controls, by the calorimetric method using 2,4 dinitrophenyl hydrazine.

Mean blood ascorbate levels in the study group were significantly lower as compared to the healthy controls (Pl-less than 0.001). As the severity of malnutrition increased, there was a corresponding decrease in blood ascorbate levels. Blood ascorbate levels in PEM Grade I were 0.51 +(-) 0.09 mg%, in PEM Grade 2 0.51 +(-) 0.09 mg%, PEM Grade 3 0.46 +(-) 0.12 & PEM Grade 4 0.42 +(-) 0.08 mg%, while in controls it was 0.77 +(-) 0.07 mg%.

The low levels of blood ascorbate found in the severe degrees of PEM indicates provision of additional supplements of vitamin C in these children is important to safeguard against infections, and to improve the body resistance of these immunocompromised children.

NUT/07. SERUM T3, T4 AND T.S.H. IN CHILDREN WITH MALNUTRITION

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Thyroxine, Triiodothyronine, and Thyroid stimulating hormonal levels in 75 consecutive male and female children including 25 controls and 50 children with varying degrees of protein energy malnutrition between the ages of 12-60 months admitted to Chigateri General Hospital attached to J.J.M. Medical College were studied by Radioimmune assay.

The overall mean serum T3 of these 50 children was 0.9390 +(-) 0.4287 ng/ml (range 0.25 to 1.7 ng/ml) which was significantly lower than the controls 1.82 +(-) 0.4895 ng/ml (range 0.841 - 2.799 ng/ml). It was also seen that mean T3 was little higher (1.187 +(-) 0.5161 ng/ml) in case of marasmus as compared to that of marasmic kwashiorkor 0.8753 ng/ml and kwashiorkor 0.9827 ng/ml.

The overall mean Thyroxine of these 50 children was 6.7551 +(-) 2.1549 micro gram% (range 1.1 to 10.8 microgram%) which is significantly lower than the controls 0.4950 +(-) 1.1128 microgram%. There was no remarkable difference in T4 values in different degrees of malnutrition.

Low Serum levels of TSH was observed in patients with marasmus, marasmic kwashiorkor and kwashiorkor.

Due to non-availability of protein and calories, as a protective phenomenon the hypothalamus decreases TSH secretion so that T3 and T4 are lowered. As a result of which temperature, blood pressure, heart rate and BMR and appetite decrease. The lack of appetite may work adversely in these children, thereby further worsening malnutrition which is a vicious circle.

NUT/08. DIETARY HABITS OF LACTATING MOTHERS IN NORTH INDIAN SLUMS

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In view of the paucity of information about the dietary habits, practices and intake of lactating mothers, a prospective study was conducted on 400 slum mothers who were breastfeeding their infants upto 6 months of age.

Average daily consumption was: cereals 305g, pulses 50 g, leaf vegetable 48 g, other vegetables 26 g, roots and tubers 50 g, oils and fats 23 g, milk 88 g, and sugar and/or jaggery 26 g.

By and large, all fruits were avoided on such grounds as "bad for baby", "bad for the mother", "spoils mother's milk", "hot or cold", "may cause pneumonia", and just because "it is a family taboo".

Food stuffs highly valued, more so during the early months of nursing, included mixture of dry fruits, fats and herbal ingredients despite the fact that it was beyond the reach of most families because of its high cost.

There was a clear cut relationship between the inadequacy or adequacy of the dietary intake of the nursing mother and the nutritional status of the infant.

To concluded, dietary consumption and habits of lactating mothers in the slums are far from adequate, and a major cause of high incidence of malnutrition and the consequent morbidity and mortality in infants and children.

NEUROLOGY

*NEU/01. REVERSIBLE COMPUTERIZED TOMOGRAPHIC LESIONS FOLLOWING CHILDHOOD SEIZURES

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Recently, reversible computerized tomographic (CT) lesions following seizures have been reported, mostly in adult subjects. Focal CT lesions following seizures were recorded in 20 children. The lesion distribution was parietal in 17, frontal in 2, occipital in 1 and temporo-parietal in 1. Multiple simultaneous lesions were observed in 1 child. Plain scan revealed evidence of cerebral edema in 16 patients (mild-10, moderate 4 and severe 2). Enhanced scan showed a ring lesion in 12, hyperdense focus in 5 and non enhancing (hypodense) lesion in 2 children (excluding one child who had multiple lesions; 3 rings and 1 dense focus). These subjects were treated with anti-epileptic drugs only. Repeat CT scans yielded a complete resolution in 12 and a significant resolution in 8. It is concluded that in children with seizures, reversible CT demonstrable focal abnormalities may occur.

*NEU/02. CLINICAL AND ELECTRO-ENCEPHALOGRAPHIC CORRELATION OF EPILEPTIC SEIZURES IN CHILDREN

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One hundred and twelve children, 1-14 years of age from Paediatric Department, Rajendra Hospital/Medical College, Patiala, were studied from September 1989 to July 1990, to find out the pattern of various types of epilepsy, and to see the electro-encephalographic- clinical correlation.

As regards socio-demographic data, there were 70 males against 42 females. Maximum number of cases (48.2%) were between 5-9 years of age and minimum (21.4%) between 1-4 years. Urban cases (58.0%) predominated over rural (42.0%). Highest prevalence (66.0%) was observed in middle socio-economic group. 55% had onset of seizures between 5-9 years of age followed by 36.0% having onset between 0-4 years and 9.0% between 10-14 years. Positive family history of epilepsy was found in 21.8%. Etiology could be established in 32.1%; birth injuries (10.7%), febrile seizures (7.1%), trauma (6.2%) and CNS infections (3.6%) being main factors. Out of 112 cases, 96 (85.7%) could be classified; 16 (14.3%) being unclassifiable. 57.3% (55) of the classifiable cases had partial epilepsy, 41.66% (40) had generalized epilepsy and 1.04% (1) had epilepsia partialis continua. Among the partial epilepsies complex partial seizures were predominant, being 32.3% of total classifiable cases. Simple partial epilepsy becoming secondarily generalized constituted 14.6% and 10.4% of classifiable cases, respectively. Among the primary generalized epilepsies, generalized tonic clonic seizures were predominant, being 22.9% of the total classifiable cases. Generalized tonic, generalized atonic, juvenile myoclonic and petit mal constituted 8.33, 4.16, 2.08 and 1.04% of cases, respectively. Out of three cases of secondary generalized epilepsy, two (2.08%) had West's syndrome and 1 (1.04%) had Lennox Gastout's syndrome. So, complex partial seizures (32.3%) and primary generalized tonic clonic seizures (22.9%) accounted for nearly one-third and one-fourth of the total classifiable cases, respectively.

Definite epileptic activity was observed in 81.3%; 18.7% having normal graphs. Among the 16 cases of unclassified group 75.0% had generalized epileptic activity, 12.5% having laterali-

zation with secondary generalization and 12.5% having normal graphs. Among partial epilepsy group of 55 cases, generalized epileptic activity, lateralization with secondary generalization, focal activity and normal graphs were seen in 30.9, 25.45, 18.2 and 25.45% of cases, respectively. 29% cases with complex partial seizures had normal graphs. And among the generalized epilepsy group of 40 cases, generalized epileptic activity, lateralization with secondary generalization, focal activity and normal graphs were seen in 75.0, 10.0, 2.5 and 12.5% of cases, respectively. One case of epilepsia partialis continua which showed focal epileptic activity was proved to be having tuberculoma on CT Scan.

In conclusion, it can be stated that EEG is only a supplementary tool and a pointer for further evaluation of cases of secondary epilepsy like cases of tuberculoma, cysticercosis, tumours, etc. which show focal or lateralized epileptic activity. Carotid angiography, CT scan and NMR are diagnostic in such cases.

***NEU/03. AN EPIDEMIOLOGICAL STUDY OF FEBRILE SEIZURES WITH SPECIAL REFERENCE TO FAMILY HISTORY AND HLA LINKAGE ANALYSIS OF FAMILIAL FEBRILE SEIZURES OF CHILDHOOD**

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144 cases of febrile seizures, 95 simple and 49 complex, were studied and compared for clinical epidemiological data such as age of onset, sex, precipitating illness and time of onset. Pedigrees upto three generations were analyzed and compared for incidence of febrile and afebrile seizures in both simple and complex febrile seizure groups. Eighteen families with two or more siblings having febrile seizures were identified and subjected to HLA - A and -B linkage analysis by standard micro-lymphocytotoxicity techniques. Haplotype segregation was statistically analyzed using the standard Nijenhuis formula.

Major results were: maximum age of onset below three years (75%) in both simple and complex groups, male preponderance, respiratory infection as the commonest etiology (69.4%); and maximum seizure onset during first 24 hours of fever (73%).

Familial incidence of all seizures was 29.17%; and for febrile seizures, 20.14%; the latter being the same in simple and complex groups. The commonest relative was a sibling (13.19%) and in parents the incidence was 4%. The familial incidence of afebrile seizures was 13.89%; for simple cases 6.32% and for complex 28.57% ($p<0.01$). Families with two additional members with history of seizures revealed complex seizure patterns of two-thirds of index cases. Distribution of family history of various seizures types showed no correlation with age at onset.

Seventeen families showed patterns suggestive of autosomal recessive inheritance, but autosomal pseudodominance and autosomal dominant inheritance could not be ruled out.

In HLA linkage analysis, in nearly 50% of families, siblings showed maternal or paternal haplotypes; but the value was not statistically significant. One-third of families had siblings showing identical haplotypes with five of the six showing the presence of HLA A11. This small though adequate family sample size did not reveal an HLA marker for febrile seizures.

*NEU/04. STUDIES ON RECURRENT AFEBRILE SEIZURES IN CHILDREN WITH SPECIAL REFERENCE TO CLINICAL AND ELECTRO-ENCEPHALOGRAPHIC CORRELATION

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One hundred patients aged 3 months to 7 years suffering from recurrent afebrile convulsions were studied in the Dept. of Pediatrics, Medical College, Calcutta. The patients were analyzed clinically thoroughly. EEG examination was done in 60 cases. Incidence of male patients was higher than that of female patients. Age at onset of first attack of seizure was maximum in the age range of 7-12 months (24%). Among 100 cases, 74% cases suffered from primarily generalized seizures whereas 12% had partial seizure, 12% had focal onset seizure with secondary generalization and 2 had reflex epilepsy. Past history of head injury was found in 21% of cases. History of atypical febrile convulsion was seen in 11% cases. 18 cases had delayed motor and mental development, and 2 cases had tuberous sclerosis. Among 40 cases with generalized convulsion 25% showed normal EEG pattern, whereas 75% cases showed EEG changes specific for epilepsy. 2 cases with absence attack had abnormal EEG changes. Among 7 cases with myoclonic attack 1 had normal EEG. 66.6% of the partial seizures showed EEG changes specific for epilepsy. Bilateral EEG changes were found in 67.5% cases with generalized seizure and 7.5% cases with generalized seizure showed unilateral EEG changes.

*NEU/05. AUTO INDUCTION BY CARBAMAZEPINE CAUSES STATUS EPILEPTICUS

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Carbamazepine auto-induces its metabolism with a reduction of plasma concentration observed from three days to four weeks after initiation of therapy. Infrequently, this may result in recurrence of seizures after a brief period of control. We report two cases of status epilepticus following auto induction by Carbamazepine of its own metabolism.

Case One:

A 10 year old girl had seizures with "staring and eye-blinking" lasting 2-3 minutes that progressed to generalized tonic clonic seizures. After two generalized seizures, she was started on carbamazepine, and the dose increased to 600 mg. daily. Two weeks later, an EEG done showed generalized background slowing.

After six weeks on this dose, she began having generalized seizures occurring briefly, then increasing in frequency and lasting 5-10 minutes. Prior to admission, she had 20 generalized seizures over 16 hours. At the time of admission, her carbamazepine level was 3.5, and her compliance was reported excellent.

Status epilepticus was controlled by a single Dilantin bolus. She remains on 800 mg of carbamazepine daily with a trough carbamazepine level of 6.5 mg/ml. There is no recurrence of seizures eight months later.

Case Two:

A 6 year old had partial seizures with left leg numbness followed by clonic movements of the face, arm and leg of the left side. She was started on Carbamazepine and the dose gradually increased to 300 mg daily. After 8 weeks of remaining seizure free she complained of spontaneous macropsia and micropsia of objects in the environment. This occurred repeatedly for

45 minutes.

The dose was increased to 400 mg daily with no recurrence of the seizures two months later.

Induction of its metabolism and reduction of its drug level, by carbamazepine, may precipitate status epilepticus. Anticipation of this phenomenon and dose adjustment will prevent this complication.

NEU/06. COGNITIVE & BEHAVIORAL DYSFUNCTION IN MENTALLY RETARDED CHILDREN WITH AND WITHOUT EPILEPSY: EFFECT OF BR-16A, (MENTAT) A HERBAL PREPARATION

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It is important to control abnormal behavior, hyperactivity and improve cognition in mentally retarded children which would help in educational training and subsequent rehabilitation. Recently, amongst other side effects, protracted use of anticonvulsant medication is known to induce cognitive and behavioral dysfunction, which is a major problem in mentally retarded epileptics. In a placebo controlled study, we confirmed the efficacy of a herbal preparation, BR-16A, in controlling such behavioral and cognitive deficits in 40 mentally retarded children. Efficacy of this preparation was further evaluated in 20 MR with epilepsy. 12 patients had generalized seizures, 4 with partial and 3 with mixed seizure pattern. Regular anti convulsant therapy suited for the seizure pattern was continued. Inspite of the usual anti-epileptic treatment, the frequency of seizures ranged from 1 to 7 attacks in periods ranging from 1 week to 1 year. With the active drug, BR-16A, it was possible to note reduction in seizure frequency. Patients with higher frequency responded better. There was no further increase in the dosage of anti epileptic drugs. There was significant control of other abnormal behavior as shown by reduction in rating score on Children Behavioral Inventory test. BR-16A was effective in controlling abnormal behavior, especially hyperactivity and incongruous behavior in mentally retarded children with and without epilepsy.

NEU/07. ASSESSMENT OF INTELLIGENCE IN SCHOOL CHILDREN

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The study, "Assessment of intelligence in school children" has been undertaken with a view to study the I.Q. (i.e. potential) of children in different age groups.

A total of 240 children (163 boys and 77 girls) of 10-14 years age group from the Saraswati Shishu Mandir, Rewa, were included in the study.

All children were subjected to Tripathi and Joshi's nonverbal group test of intelligence.

Percentage of children in different categories of I.Q. were 17.08% very superior, 30.83% were superior, 19.16% bright normal 24.58 average, 4.58% dull normal, 2.9% borderline and 0.83% defective. Thus 67.07% children were above average I.Q.

Thus the desirability of subjecting all children to I.Q. studies in order to select the students at both extremes (the one with high and other with low I.Q.) for special attention, merits attention.

NEU/08. EFFICACY OF BR-16A (MENTAT) IN BEHAVIORAL DYSFUNCTION AND HYPERKINESIS IN CHILDREN

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Efficacy of BR-16A, a herbal complex preparation was evaluated in 40 hyperkinetic children in a placebo controlled double blind parallel group study following random allocation of drug. The mean age of children in two groups was not different. The dose of active drug or placebo was 1 to 2 tsp. three times a day for 12 weeks. The initial dose of 1 tsp. was stepped up to maximum of 2 tsp. tds per day. Evaluation of efficacy was carried out using CBI scale, global impression and questioning the parents, before initiating the therapy and then at 6 and 12 weeks interval.

Significant improvement was noted at 6 and 12 weeks in active treatment group as compared to week 0, and also at the corresponding time points of placebo. In placebo treated group, also improvement was noted, but it was not significant. Parents reported definite improvement with BR-16A and not with placebo. Mean dose required in placebo group was significantly higher than observed with BR-16A. Number of drop-outs was more in placebo group than in BR-16A group. No side effects were noted. BR-16A was useful in controlling abnormal behavior in children.

NEU/09. ACUTE TRANSIENT STOKES ADAMS SYNDROME IN A CHILD

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A 4 year old female child with common cold and mild fever suddenly collapsed while standing and became pale, developed decerebrate spasms for about 10 seconds. There was slow recovery, regained consciousness slowly over next 5 Mts. Again she became pale and had decerebrate spasms while we were examining the child. Her peripheral pulses disappeared and heart stopped during decerebrate spasms. E.C.G. taken at that time showed Complete Heart Block. Child was attached to a cardiac monitor which showed complete heart block, and the decerebrate spasms were associated with complete ventricular asystole. As these attacks continued even after Inj. Atropine, temporary pacemaker lead was placed in the Right Ventricular Apex through femoral vein. Her spasms completely stopped and she regained consciousness within few minutes. The pace maker was removed after 48 hrs. Child is well now and E.C.G. and Echocardiogram revealed her heart to be normal.

The whole episode followed a minor viral illness. Many such minor illnesses turn out to be fatal sometime. Could this be a cause of Sudden Infant Death Syndrome (SIDS)?

NEU/10. SERUM AND CEREBROSPINAL FLUID ELEMENTS (Zn, Cu, Mn and Mg) IN SEIZURES IN CHILDREN

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In this study levels of Zinc (Zn), Copper (Cu), Manganese (Mn) and Magnesium (Mg) in cerebrospinal fluid (CSF) as well as in serum in cases of seizures of various primary and secondary etiologies were estimated. For this purpose, fifty children having seizures of varying etiologies ranging in age from neonatal period of 12 years were selected. Cases with acute or chronic diarrhoea/dysentery, severe malnutrition, severe

anaemia, malaria, typhoid and other similar illness known to cause changes in serum elements and children with systemic disorders other than CNS infection were not included in the study. Besides 15 serum and 5 CSF samples of healthy infants and children served the purpose of controls. Estimation of Zn, Cu, Mn and Mg was done by standard technique using the atomic absorption spectrophotometer.

Of the total 50 children, 35 were males and 15 females. Fifty four percent were between the age of 1 mo. to 3 years, 20% between 3-6 years and 14% were below 1 month of age. Primary seizures were observed in 44%, and secondary in 56% of cases. Common causes of secondary seizures were meningitis (30%), encephalitis (10%), Febrile seizures (10%) and anoxia (6%).

Mean serum Zn concentration (88.57 +(-) 21.82 ug/100 ml) was significantly low in cases of seizures as compared to controls (120.94 +(-) 33.67 ug/100 ml) but no significant difference was found between primary and secondary seizures. Mean Zn concentration in CSF (4.50 +(-) 1.34 ug/100 ml) was high both in primary and secondary seizures compared to controls (4.06 + 1.22 ug/100 ml) but statistically significant only in secondary group. There was significant correlation between serum and CSF values of Zn, in the generalized secondary seizures.

Mean copper concentration in serum (175.83 +(-) 75.28 ug/100 ml) was significantly high in all types of seizures as compared to controls (130.27 +(-) 29.42 ugm/100 ml); whereas mean Cu concentration in CSF (11.543 +(-) 45.15 ug/100 ml) was low in all types of seizure cases in comparison to controls (168.30 +(-) 25.44 ug/100 ml). No significant difference in serum and CSF values of Cu was found between primary and secondary seizures.

Mean Manganese concentration in serum was higher (283.68 +(-) 96.02 ug/100 ml) both in primary and secondary seizures as compared to control group (260 +(-) 55.75 ug/100 ml) but levels were statistically significant only in the primary group. Mean manganese concentration in C.S.F. (232.57 +(-) 83.70 ug/100 ml) was lower both in primary and secondary seizures as compared to control group (277.6 +(-) 43.94 ug/100 ml) but statistically insignificant. Significant difference was found between primary and secondary seizure cases themselves. The elements in CSF had significant positive correlation in generalized primary seizures but insignificant in generalized secondary and also in partial seizures.

Mean magnesium concentration in serum (3.15 +(-) 1.027 ug/100 ml) was lower both in primary and secondary seizures as compared to control group (3.53 +(-) 0.77 ug/100 ml) but statistically significant only in the secondary type of seizures. Mean Magnesium concentration in CSF was low (3.75 + 0.929 ug/100 ml) both in primary and secondary group seizures compared to control (4.49 + 9.59 ug/100 ml) group, but statistically significant only in the secondary seizures group. Significant positive correlation was seen in whole sample except partial seizures of secondary etiology between serum and CSF values of magnesium.

To conclude, larger and better designed studies are required to confirm these findings and to look for the pathophysiological basis of the observed changes.

NEU/11. EARLY-ONSET SPINO-CEREBELLAR ATAXIA (EO-SCA) IN FOUR SIBLINGS

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Four children - two boys and two girls, aged 12 to 20 years, born to consanguineous, clinically unafflicted parents presented with slowly progressive ataxia, muscle weakness and hyporeflexia. Onset was between 8 & 10 years age in all. Hereditary spino-Cerebellar Ataxia (HSCA) of early-onset, resembling Friedreich's Ataxia (FA) was diagnosed. No member in two previous generations was affected. Inheritance was probably autosomal recessive.

Blood, Urine, CSF investigations and ECG were normal. Neurophysiological tests showed progressive deterioration from youngest to oldest sibling. The respective results were:

1. Motor Nerve Conduction Velocity (MNCV) (N=45-60 m/s)
45.58, 43.75, 41.94, 32.05

2. Distal Latency (N=3.5-6 ms)
3.6, 4.0, 3.6, 5.0

3. F - response (N=40-45 ms for 1&2 cases) (N=45-50 ms for 3&4 cases)
41.6, 42.6, 46.2, 48.8

Electromyography ranged from normal in youngest to severe denervation pattern in the oldest child.

Cases in this series demonstrate heterogeneity and progression with advancing age. All had ataxia, dysarthria and weakness. Other manifestations varied. The youngest child, though symptomatic for four years, had normal neurophysiological test results. Thus, the importance of clinical diagnosis is stressed, especially since neurophysiological tests may remain normal for long after onset of symptoms.

Classifying HSCA clinically by eponyms is confusing. It appears prudent to divide HSCA into early-onset (<20 years) and later-onset (>20 years) types, especially since clinical-pathological correlations are scanty. Identification of Malic Enzyme deficiency in FA has not clarified its nosology. Genetic markers like DNA-linked or oligonucleotide probes should prove useful in identifying mutant genes determining HSCA.

NEU/12. ELECTRO PHYSIOLOGICAL STUDY OF PERIPHERAL NERVOUS SYSTEM IN PROTEIN ENERGY MALNUTRITION

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Protein energy malnutrition is a common aliment in children between the age of 6 months to 60 months. This period of life coincides with rapid acceleration of growth and development of biochemical and functional maturity of the peripheral nervous system. Any metabolic or nutritional insult occurring during this period can give rise to anatomical and functional derangement of neuromuscular electrophysiology. Most of the neurological manifestation of protein energy malnutrition (PEM) like hypotonia, depressed tendon reflexes can be attributed to desynchronization of nerve impulses due to unequal slowing of conduction between nerve fibres.

The present study was undertaken in the department of Pediatrics, S.C.B. Medical College, Cuttack, during the period extending from January, 88 to September, 89. For the purpose of control 15 children between the age group of 6 months to 60 months of both the sexes without any clinical or anthropometric evidence or malnutrition were taken. In the disease group, 42 children were selected suffering from different types of malnutrition and were grouped into 4 groups according to their body weight for age.

From these 42 children, 143 nerves were studied for distal latency, amplitude and motor nerve conduction velocity (NCVs).

Sensory nerve action potential (SNAP) were recorded only in median nerves in 28 cases. Electromyogram was done in 37 cases, sural nerve biopsy in 7 cases and muscle biopsy in 9 cases. Among the 4 groups, 6-12 months, 13-36 months and 37-60 months, in the ulnar, medical and lateral popliteal nerves. The NCVs. in the lower limbs of all the age groups were a little slower in comparison to that of the upper limb nerves. The conduction velocity of the proximal segment was a little more than the distal segment of the ulnar nerves in the control cases. Between the 4 groups of PEM, the NCVs revealed delayed conduction in all the nerves as compared to the control cases. This was highly significant in cases of marasmic Kwashiorkor. There was also a direct relationship between the duration of malnutrition and delay in NCVs.

Sensory nerve action potential was studied in 30 cases in the median nerves. In 5 cases, action potential could not be recorded. In the rest of the cases the amplitude of the sensory response was reduced as compared with the controls. The distal latency was increased in these cases.

The EMG did not reveal any abnormality, except in 3 cases where small motor units with amplitude ranging between 100-300 microvolts were present.

Muscle biopsy and sural nerve biopsy did not throw more light to explain the pathogenesis of the delay in NCVs. in the present series.

Follow up studies in 14 cases for a period of 4 weeks did not reveal any significant improvement in the NCVs. even though the clinical and biochemical parameters showed improvement.

Normally, the mean NCVs. of different nerves increases with age and attains adult value by 5 years of age. Definite delay in NCVs. occur in PEM. in all age groups and in all types.

NEU/13. SCALP VEIN DILATATION -- AN EARLY SIGN OF INTRACRANIAL SINUS THROMBOSIS

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The clinical manifestations of cerebral venous thrombosis are none or solely confined to raised intracranial pressure. It is clinically recognizable when seizures, alteration of consciousness and focal deficits occur. The occurrence of focal deficits implies thrombosis of cortical veins. We describe a 2 year old who presented with scalp vein dilatation and developed massive intracranial lateral sinus thrombosis.

Case summary:

A 2 year old child presented with fever, diarrhea and dehydration. At admission, scalp edema and prominent dilated veins were present over the left temporal region. The child was alert and playful and the neurological examination was normal.

Two days later the child suddenly had right sided convulsions and became comatose. CT scan of the head revealed massive left temporo-parieto-occipital lobe hemorrhagic infarction with evidence of trans-falcine herniation. He developed signs of brainstem herniation rapidly and expired twenty-four hours later.

Cerebral sinus thrombosis is frequently clinically silent. When scalp vein prominence and edema is noted in the presence of predisposing

risk factors, sinus thrombosis should be suspected and anticoagulant therapy considered to prevent extension of thrombosis.

NEU/14. PARTIAL SEIZURES IN BENIGN ROLANDIC EPILEPSY

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Partial seizures in benign Rolandic epilepsy are recognized as a frequent childhood seizure type, beginning in the first decade of life and ending spontaneously by teenage years. Characteristically, these seizures are diurnal with speech arrest, facial twitching and oropharyngeal symptoms. The EEG shows characteristic centrotemporal spikes occurring repetitively.

Nine patients meeting these criteria with ages ranging 5-11 years were identified. Three patients had only partial seizures, three had partial and generalized seizures and three had only generalized seizures. The frequency of seizures ranged from 2 to 12, mean 3.5, over a 9 month period of observation. All had normal examination and in two patients CT scans done were normal. EEG revealed focal spikes occurred unilaterally in six and bilaterally in three.

In our population, partial seizures in childhood are frequently associated with abnormality on CT scan. In our patients with benign Rolandic epilepsy no focal deficits occurred and imaging studies when obtained are normal. We document the occurrence of this syndrome in India, and distinguish it from partial seizures with structural lesions.

NEU/15. EXPERIENCE WITH DIAZEPAM IN THE TREATMENT OF BREATH HOLDING SPELLS (BHS)

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Diazepam is a known tranquilizer. This has been used in the clinical trial in BHS. The study was conducted from 1987 March through 1989 March. 33 cases formed the material of study. In 20 cases BHS were controlled, in 5 cases partial control was achieved and were lost to further follow up. 8 cases after first prescription were lost to follow up. Total period of treatment is 4-6 weeks. The study revealed in 60% of the cases there was control of Breath holding spells. In 15% partial control was achieved. Diazepam can be routinely advocated in the management of Breath holding spells (BHS) further clinical trials are advised.

NEU/16. MUSCULAR DYSTROPHIES - CLINICAL SPECTRUM

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Muscular dystrophies are genetically determined and progressive primary muscle disease, of which Duchenne muscular dystrophy (DMD) and mild Becker muscular dystrophy (BMD) are the predominant ones. 80 patients of muscular dystrophies were treated in the Physical Medicine and Rehabilitation department of Kalawati Saran Children Hospital, Delhi during the last 3 years. Clinical analysis of all these cases was done to know about the clinical spectrum of the disease. Diagnosis was mainly clinical, supported by the investigations like creating phosphokinase (CPK) estimation and/or Electromyography (EMG) and/or muscle biopsy, wherever feasible.

71.25% of the cases belonged to age group of 3-7 years. 95% of the affected children were male. Difficulty in arising from the floor, demonstrated clinically as a positive Gower's maneuver was the main presenting complaint in 78.75% of the children. Mental retardation was

associated in 18.75% of cases, while one female retarded child has seizures also. Hypertrophied calves were noted in 81.25% cases, of which 24.6% cases had hypertrophy of other muscles also. In 26.25% cases, Wasting of hip extensor and/or Quadriceps and/or Biceps was noticed. Spinal and lower limb deformities were observed in 47.5% of cases, of which tendo-Achillis tightening was the most frequent (57.89%), followed by lumbar lordosis (36.84%), pes cavus (18.42%) and flat feet (5.26%). In advanced cases, flexion contracture of all big joints was seen (7.89%). History of similar illness in maternal uncles was found in 2.5% cases, while in 18.75% cases, male siblings were observed to be affected. Carrier stage was detected as raised CPK levels in female sibs of 12.5% cases, 75% of the males correspond to the diagnosis of DMD, while 18% clinically fitted into BMD. Rest 7% of males probably belonged to congenital myopathy group. Out of 4 female children, one was diagnosed to have Limb girdle dystrophy, one with shoulder girdle involvement only belonged to facio - scapulohumeral dystrophy, while rest two were probably cases of congenital myopathies, having early onset with facial asymmetries and associated mental retardation.

NEU/17. HEPATIC PROFILE IN ANICTERIC NON-MENINGITIC ACUTE ENCEPHALOPATHY AND IT'S DIAGNOSTIC AND PROGNOSTIC VALUE

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The aim of this study was to study acute encephalopathic illness in children of various age group with view to revisit clinical features, hepatic function, hepatic histopathology and to evaluate and standardize their diagnostic and prognostic significance.

Forty five children admitted with acute unconsciousness with normal C.S.F. without clinical evidence of jaundice were selected for this study from August 1987 to October 1989 at T.N. Medical College, Bombay.

Significant hepatomegaly was present in 80% children with Reye's syndrome. Seven out of 45 had hyperammonemia out of which 3 cases (43%) were diagnosed as Reye's syndrome. S.G.P.T. was elevated in 80% children with Reye's syndrome, 80% with hepatitis and only 5.5% with normal liver biopsy.

Out of 45 cases of anicteric, nonmeningitic acute encephalopathy, 13/18 children turned out to be encephalitis on autopsy with normal liver biopsy, five turned out to Reye's syndrome, five cases of anicteric hepatitis and rest were from miscellaneous group. Mortality was directly related to severity of coma irrespective of underlying cause as 80% mortality was observed with normal liver biopsy (Encephalitis) with Reye's syndrome and with hepatitis encephalopathy. Thus, commonest cause of non-meningitic anicteric acute encephalopathy is encephalitis. Reye's syndrome is not as common as it is thought, as anicteric hepatitis is also common.

CARDIOLOGY

*CAR/01. EPIDEMIOLOGY OF CONGENITAL MALFORMATIONS OF THE CARDIOVASCULAR SYSTEM - A PROSPECTIVE STUDY

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In India and other developing countries, the percentage of perinatal mortality due to congenital malformations is about 20-30% and is on the increase. This clinical study was performed to determine the incidence, pattern and possible etiological factors of congenital heart lesions and their impact on children in the long term. All children with organic heart diseases attending the Pediatric services of S.P. Mother & Child Health Institute, Jaipur were evaluated over a span of six months from Jan.90 to June 90. The study continues, however cases recorded till June 90 were included in this presentation. A total of 147 confirmed cases of congenital defects of the cardiovascular system were evaluated. The organic heart diseases constituted 3.71% of the total admissions, out of which 2.5% were of congenital heart defects (68% of all organic heart diseases). The age ranged from newborns to 15 years. Acyanotic defects exceeded cyanotic lesions (74% versus 26%). Ventricular Septal Defects were the commonest lesions throughout the childhood (more than 50%) of all the lesions, newborns accounted for 11%, of which 32% were of fatal cyanotic defects. 78% of CHDs were in infancy. Nearly 8.9% were due to antenatal illnesses (4% due to antenatal infections) 8% due to consanguinity and drugs each, 2.5% due to X-rays. Maternal age was more than 30 years in 10% of cases and less than 20 years in 53% cases. Nearly 60% cases were born to poor parents of rural background. Males predominated the females in all congenital heart lesions, except coarctation of Aorta and PDA. Echocardiography (2D, M-Mode and Doppler) confirmed the clinically suspected lesions in significant proportions. Poor coverage was found in followup of the cases. Mortality was significantly more in newborn (60% died due to fatal cyanotic lesions). Bronchopneumonia, and congestive heart failure accounted for about 72% of deaths. Failure to thrive, infective endocarditis and recurrent respiratory infections added to the increased morbidity.

This study clearly demonstrates the significant contribution of Echocardiography to accurate diagnosis and Management and, it also highlights the impact of better antenatal services in reducing the incidence of congenital malformations.

*CAR/02. PENICILLIN LEVELS IN CHILDREN ON RHEUMATIC FEVER PROPHYLAXIS

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Prophylaxis of recurrences is the finest achievement of medicine in Rheumatic Fever. It is markedly effective and supposed to practically eliminate the recurrences with 1,200,000 units of Benzathine Penicillin G (BPG) administered intramuscularly every 4 weekly. However a high recurrence rate was noted amongst 335 patients of RF/RHD followed up by us. A change over from 4 weekly to 3 weekly regimen brought down the recurrences significantly from 25.5% to 5.5% with recurrence rate / patient / year being 0.06, which was high compared to other reports in the literature and was alarming.

Hence, a study of Penicillin levels in blood was

carried out in some of these patients. Thirty patients were studied in whom Penicillin levels were estimated serially till the 21st day after administration of BPG injection. They were estimated by the microbiological assay method. The sensitivity of method was 0.004 u/ml. The MIC for streptococci ranged from 0.0015 u/ml to 0.02 u/ml. It was observed that 29.62% patients showed no detectable Penicillin levels on day 14. 70.37% patients showed levels above the lowest detectable levels i.e. > 0.004 u/ml & 62.96% patients showed levels above the MIC i.e. > 0.02 u/ml.

On day 21, 62.06% patients showed no detectable levels. Only 37.39% patients had detectable Penicillin levels. However only 24.13% patients had detectable Penicillin levels.

Thus it can be seen that 3 weekly prophylaxis is not enough to keep levels of Penicillin above MIC and prevent recurrences.

CAR/03. CLINICAL AND INVESTIGATIVE PROFILE OF ACYANOTIC CONGENITAL HEART DISEASE

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Acyanotic congenital heart disease forms a sizeable proportion of cases in the paediatric OPD. In its overt form, with gross clinical findings, diagnosis is relatively simple but in its milder and often latent forms diagnosis is at times difficult and requires a thorough understanding of the clinical signs and symptoms of these varied though related clinical entities; the incidence of which has been reported to be between 0.5% - 2.0% of paediatric sick population.

MATERIALS AND METHOD:

100 cases of suspected acyanotic congenital heart disorders between the age group of 6 months to 12 years were evaluated in the Department of Paediatrics, AFMC over a period of 2 years (1986-88). These children were subjected to detailed clinical examination, electro-cardiography, radiological investigation, echocardiography and in select cases even to cardiac catheterization.

RESULTS:

Ventricular septal Defect (VSD) was found the most common acyanotic congenital heart disorder (53%), followed by Atrial Septal Defect (ASD) (23%) and Patent Ductus Arteriosus (PDA) (10%).

A few cases of coarctation of aorta (6%), Pulmonary Stenosis (3%), aortic stenosis (3%) and congenitally corrected transposition of great vessels (2%) were seen.

The overall male: female ratio was 1:1.3. Episodic fever (87.5% - 100%), failure to thrive (87.5% - 100%), cough (67%), breathlessness (25% - 40%) and palpitations (25%) constituted the main presenting features of VSD, ASD and PDA, whereas headache, undue fatigue and breathlessness were the main complaints in coarctation of aorta.

Dyspnoea (25%-66%), Tachycardia (42%-87%), Precordial bulge and pulsations (57%-100%), clinically detectable cardiac enlargement (42%-100%) and various murmurs (100%) were the main clinical signs observed in VSD, ASD and PDA. An additional feature in coarctation of Aorta was hypertension in all cases.

Using electrocardiography, left ventricular hypertrophy was detected in 75% and 66.6% of cases of VSD and PDA whereas Right ven-

tricular hypertrophy was detected in 57.1% of cases of ASD. Radiologically, left ventricular hypertrophy was detected in 66%, 50% and 75% cases of PDA, coarctation of aorta and VSD respectively. Right ventricular hypertrophy was detected in 85.2% of cases of ASD.

Echocardiography revealed echo-dropout in 100% cases of ASD and 93.7% cases of VSD. Correct diagnosis of PDA using echocardiography however was established in only 66.6% cases.

CAR/04. PERSISTENT PULMONARY HYPERTENSION OF THE NEWBORN (PPHN) - PGI EXPERIENCE

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Persistent pulmonary hypertension of the newborn (PPHN) characterized by right to left shunting with intense cyanosis is difficult to manage and in the best of centres carries a 40-60 percent mortality. We report our one Year's experience of managing six neonates with PPHN.

There were 5 males and 1 female with mean birth weight of 2.59 +(-) .487 kg and gestation period 39 +(-) 2.0 wks and 1 minute apgar score 2.8 +(-) 2.1. 4/6 babies were born by cesarean section and 3/6 babies had aspiration pneumonia. All babies presented within 12 hours of age (mean 5.08 +(-) 5 hrs) with intense cyanosis and respiratory distress. Diagnosis were confirmed in all by (a) Hyperoxia test, (b) Simultaneous determination of preductal and postductal paO2 (c) contrast echocardiography (3) & (d) hyperoxia-hyperventilation test. Babies were managed with hyperventilation using mean ventilatory rates of 100 +(-) 45 per minute, an inspired oxygen concentration of 100%, peak inspiratory pressures 27 +(-) 9 cm of H2O, and expiratory pressures 5 +(-) 1.6 cms of H2O, and mean air way pressures of 10.4 +(-) 2.7 cms H2O. Alkali therapy was used in 3 of the six babies whereas low dose dopamine was infused in all six babies. Inspite of aggressive ventilatory therapy, 66 percent babies could not be salvaged.

CAR/05. CLINICAL STUDY OF RHEUMATIC FEVER & ITS SEQUELAE STUDIED AT VANI VILAS CHILDREN HOSPITAL

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(From 1st October 1989 to 20th September 1990 - Cardiology clinic + Inpatients)

A. Rheumatic Heart Disease

Totally 67 cases of Rheumatic Heart Disease were studied. Of these, 49 cases were between 5-10 years, 17 cases were more than 10 years, one at 4-1/2 years of age. Of this, 36 were males and 31 were females.

22 of them presented with Acute Rheumatiç carditis, 12 of them presented with pure Mitral stenosis, 21 with MS & MR, 16 with pure Mitral Regurgitation, 5 with Aortic regurgitation and 3 with functional Tricuspid regurgitation. 13 of them had no evidence of cardiac lesion at the end of one year on follow up. 2 of them had subcutaneous nodules.

6 of them had Rheumatic Fever relapse and all were treated with steroids and all of them improved. 5 of them had Subacute Bacterial

endocarditis during the year. 4 of them improved and 1 boy died following SBE and severe congestive cardiac failure.

One has undergone Mitral Valvotomy.

B. Rheumatic Chorea

A Total of 13 cases were studied during the year. 3 were males and 10 were females. 4 were between 5-10 years and 9 were between 10-13 years. Average duration after Acute Rheumatic Fever was 4 months.

11 were treated with Haloperidol and 2 had spontaneous remission and they were mild. No adverse reactions to Haloperidol were noted in the series.

Associated cardiac lesion was found in 5 cases and 4 of them were hemichorea and 2 were recurrences.

C. Rheumatic arthritis only

A total of 23 patients presented only with arthritis without the evidence of carditis, of these 8 were males and 15 were females. 13 were between 5-10 years of age and 10 were more than 10 years of age.

All presented with polyarthritis, classically flitting in 17 of the total 23 cases.

All were treated with Aspirin and Procaine Penicillin.

This is a clinical study of Rheumatic Fever and its sequelae studied over a period of one year at Vani Vilas Children Hospital. All the patients described above are on Penidure Prophylaxis, no reactions to penicillin were encountered.

CAR/06. IMMUNOLOGICAL PROFILE IN CONGENITAL HEART DISEASE

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A study was carried out to assess the immunological profile in 50 children with congenital heart disease. These children were screened thoroughly and classified into 4 groups - (i) Cyanotic, (ii) Acyanotic, (iii) Cono-truncal anomalies and (iv) L-R shunts. Ventricular septal defect was the commonest lesion (56%) followed by Tetralogy of Fallot (16%), Atrial septal defect (8%), patent ductus arteriosus (4%), Transposition of great arteries (4%), Aortic stenosis (4%) and 2% each of Pulmonic stenosis, Tricuspid atresia, single ventricle with Pulmonic stenosis and Dextrocardia with Tetralogy of allot. No relationship was found between the parental age or the birth order with incidence of congenital heart disease. None of these children had suffered from any other infection apart from respiratory tract infection. Serum immunoglobins e.g. IgG, IgA and IgM were estimated in all the children studied. IgG, and IgA were found to be significantly reduced in all - whereas IgM levels were increased in cyanotic and cono-truncal anomalies but unaffected in acyanotic and L-R shunts. These levels were compared with the levels of 20 normal children who were taken as controls. Complement levels C3 and C4 were reduced in all, more so in cyanotic and cono-truncal anomalies as compared to controls. Total T-cell percentages were reduced in cyanotic and cono-truncal anomalies, whereas there was no difference in acyanotics or L-R shunt group. T helper cells were decreased and T-suppressor cells were increased in all groups as compared to controls. B-cell percentage were increased in cyanotic and cono-truncal anomalies but not affected in the other two groups. Total study group did not show significantly different levels of B-cell

percentage in comparison to controls. In conclusion, it is inferred that patients with congenital heart disease have got low immunocompetence status as compared to normal children.

CAR/07. COMPARISON OF PENICILLIN LEVELS WITH TWO BRANDS OF BENZATHINE PENICILLIN G IN RHEUMATIC FEVER PATIENTS

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Despite the use of 1,200,000 units of Benzathine Penicillin G (BPG) administered intramuscularly every 3 weeks as prophylaxis, high recurrence rate was noted amongst 335 patients of Rheumatic fever. Thirty patients were studied for Penicillin levels determined serially upto the 21st day, using Microbiological assay method. The sensitivity of which was 0.004 u/ml, the MIC for streptococci ranged from 0.0015 u/ml to 0.02 u/ml. It was observed that when Brand I BPG was administered, 62.06% showed no detectable Penicillin levels on the 21st day, while only 24.13% patients showed levels above the MIC (> 0.02 u/ml). One of the factors responsible for this could be the pharmaceutical factor. Hence we restudied the levels with another brand of the same drug viz. Brand II BPG.

Brand II BPG was administered to 23 patients; 17 with no levels at all and 6 with levels on the 21st day, after administration of Brand I BPG. It was observed that on day 14, 95.45% patients and 68.18% patients showed levels above the lowest detectable levels (>0.004 u/ml) and above the MIC (>0.02 u/ml), respectively, with Brand II BPG, as compared to 69.56% and 56.52% patients with Brand I BPG. On day 21, 63.63% patients and 40.9% patients showed levels above 0.004 u/ml and 0.02 u/ml, respectively, with Brand II BPG ($p < 0.02$). While with Brand I BPG on the 21st day 30.43% and 26.08% patients showed levels, above 0.004 u/ml and 0.02 u/ml, respectively.

Thus Brand II BPG was better than Brand I BPG, but the number of patients showing levels above MIC on day 21 did not improve greatly. Hence more frequent administration of BPG may be needed, viz. 2 weekly.

NEPHROLOGY

*NEP/01. NEPHROTIC SYNDROME IN THE FIRST YEAR OF LIFE

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22 children had the onset of nephrotic syndrome in the first year of life. Their clinical features, renal histopathology, response to immuno suppressive therapy and out come were studied.

Congenital (onset < 3 months of age) and infantile (onset 3 months - 1 year) nephrotic syndrome comprised 0.5% of all childhood nephrotic syndrome. There were 13 males and 9 females. 4 children (18%) had congenital NS with the onset of the disease < 3 months of age, 6 (27%) had an onset between 3-9 months of age and 12 (54%) between 9 months and 1 year.

Important clinical features seen in 8/22 patients (36%) were severe failure to thrive and developmental delay especially in all patients with congenital nephrotic syndrome. Haematuria and hypertension were infrequent features.

Family history of nephrotic syndrome in a sibling was obtained in 3 patients and 1 had a history of sibling death. 1 patient had immune deficiency, 1 had recurrent UTI and 1 had evidence of cytomegalo virus infection. None had congenital syphilis. Renal histopathology in 10 patients revealed MCNS in 6 cases, Mesangioproliferative glomerulonephritis in 1 and diffuse proliferative glomerulonephritis in 3. Tubulointerstitial abnormalities were seen in 3/6 cases of MCNS when the disease onset was < 3 months of age, but there were no cases of Finnish type of microcystic disease.

Conventional steroid therapy was given to 16/22 patients of whom 6/16 (37.5%) responded to steroids. Cyclophosphamide was given to 4/10 steroid resistant children of whom 2 responded. In all, 11/22 (50%) achieved remission - 6 steroids induced, 2 cyclophosphamide induced and 3 spontaneous. The most important clinical problems in this age group were major infections (21/22), resistant NS (11/22) and severe failure to thrive (8/22).

The mortality was 36% (8/22) and was due to sepsis in all cases. Mortality was unrelated to the histopathology, response to immunosuppressive therapy, or state of NS. Mortality correlated inversely with the age of onset, being highest (75%) with onset < 3 months of age.

*NEP/02. PREVALENCE OF URINARY TRACT INFECTION IN SEVERE PROTEIN ENERGY MALNUTRITION

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88 hospitalised preschool children, suffering from severe PEM (Weight for age less than 60% of expected) were studied in detail to find out the incidence of urinary tract infection in them. Another group of 53 healthy well nourished preschool children (Weight for age more than 80% or expected) formed control group.

Urine samples were obtained by suprapubic puncture in study cases below 3 years of age and by clean catch method in older co- operative children. Urine-analysis, gram smear and cultures were performed on all the cases.

UTI was detected in 7 cases (8%) of the 88 cases of study group whereas no child had UTI from controls. Associated infections in the study group were respiratory infection in 28 cases

(32%), diarrheal infections in 24 cases (27%) and other infection in 12 cases (14%).

Of the 7 cases having UTI, routine urinanalysis was abnormal in 2 cases only. One had pus cells more then 5 per HPF and one had casts - Grams smear revealed bacilli in 3 cases, UTI could be diagnosed by culture alone in 3 cases were urine exam was normal.

Ecoli was found in 3 cases, protein in 2 cases Klebsilla and Enterobactor in one case each. Blood urea serum creatinine and ultrasound renal scan were normal in all the 7 cases.

It is concluded that UTI is an important occult infection in severe PEM and a diligent search by culture should form a routine in the management of severe PEM.

*NEP/03. PERITONEAL DIALYSIS IN CHILDREN

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INTRODUCTION:

Putman in 1922 had defined the peritoneum as a dialyzing membrane and had shown that fluid and solutes could pass through this semi permeable membrane. This formed the basis of peritoneal dialysis. With further development peritoneal dialysis (PD) has become a safe and practical therapeutic procedure.

This report reviews our experience with pediatric peritoneal dialysis in 26 children during a 2 years period at Sir Ganga Ram Hospital, New Delhi.

MATERIAL & METHODS:

There were 18 males & 7 females whose age ranged from 1 month to 10 years, mean 2.5 years (Neonates are not reviewed in this study).

All 26 patients had acute renal failure (ARF). The cause of ARF was hemolytic uremic syndrome in 16 cases, septicemia in 4 cases, Post streptococcal glomerulonephritis in 2 cases, following diarrhoea & dehydration 2 cases, post operative and rapidly progressive glomerulonephritis (RPGN) 1 case each.

All patients were dialyzed utilizing standard pediatric dialysis catheters. The catheters were inserted via an infra-umbilical incision. The composition of PD fluid was modified according to the needs. The duration of PD varied from 2-4 days.

RESULTS:

20 of the 26 patients survived. Mortality rate being 23.1%. 19 patients have recovered while 1 patient who had RPGN has been put on hemodialysis and is waiting for renal transplant. Renal Biopsy in this child showed that 90% of the glomeruli had crescents.

The most common complication encountered was inadequate drainage - 19 cases (73%). This problem was solved by flushing the catheter or reinserting a new catheter. Other complications encountered were hyperglycemia (15.3%), peritonitis (11.5%), hydrocele (11.5%) and hypokalemia (30.7%).

DISCUSSION:

The most common cause of ARF in childhood is hemolytic uremic syndrome (HUS). There were 16 cases of HUS (61.5%) in this series. The other major causes of ARF in this series were septicemia and post streptococcal glomerulonephritis.

The technical advances in PD have made it relatively easy to manage renal failure in children

until recovery has occurred or until a renal transplant is available. The ease of catheter insertion, even in small children, as compared to difficulty of vascular access for hemodialysis, makes PD ideal for children.

The results of PD have been gratifying and this procedure has been technically successful in all the cases. The mortality has been because of the disease itself and not due to the procedure.

NEP/04. SERUM ELECTROLYTES AND ELECTROCARDIOGRAPHIC CORRELATION IN RENAL DISORDERS IN CHILDREN

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The present study was conducted at Army Hospital, Delhi Cantt. on 30 children between the age group of 0-12 years with various renal disorders. Twelve cases of Nephrotic Syndrome, Six of acute renal failure, three of Chronic renal failure, three of hydronephrosis, five of acute glomerulonephritis and one case of nephroblastoma were studied. Equal number of children of same age and sex groups with diseases other than renal disorders were taken as controls. The maximum concentration of serum potassium was 5.8 Eq/lit in chronic renal failure case with mean of 5.4 m Eq/L as compared to 4.2 m Eq/L and 3.7 m Eq/L in control group respectively. The mean levels of other serum electrolytes and calcium were within normal limits in all the cases. The maximum level of blood urea of 280 mg/dl and serum creatinine of 10.5 mg/dl was also detected in a case of Chronic renal failure. The electrocardiograms taken in all the cases were within normal limits.

NEP/05. MEMBRANO PROLIFERATIVE GLOMERULONEPHRITIS IN CHILDREN

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MPGN is a progressive glomerular disease with no clear cut therapeutic guidelines. This prospective study of the effects of high dose steroids on children was done at the Institute of Child Health & Hospital for Children, Madras from the year 1983 - 1990. The clinical profile and therapeutic outcome of 21 children with MPGN is given below. 90% of the children had primary MPGN. 96% of the children were less than 10 years of age. 86% were males. Nephrotic range of proteinuria in 90%, renal failure (52%), hypertension (47%) and macroscopic haematuria (43%) was seen. HbS Ag was positive in 38% of children in whom it was repeated on two occasions. Anticoagulant therapy was administered in one child, immunosuppressive in two and high dose steroids (C.D. West's regime) in fifteen children. Two were lost for follow up from the last group. Three children in the first two therapeutic groups died some time after treatment had begun. Of the thirteen children in the III group one died. Six children who had steroid therapy for more than two years were found to have marked remission in renal failure, hypertension and urine protein. Histologically among the three children with repeat biopsy two had shown resolution of thickening of the basement membrane with reduction in cellular elements. In conclusion, primary MPGN is the commonest type with a high male predilection. HbS Ag has a high association. High dose steroid therapy seemed to have a beneficial effect, particularly with short duration of illness.

NEP/06. RANDOM URINE PROTEIN & CREATININE RATIO - USE & ITS CORRELATION WITH 24 HOURS URINE PROTEIN EXCRETION IN CHILDREN

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Quantification of urinary protein excretion is used for diagnostic and prognostic purposes and to assess the effects of therapy. 24 hours urine protein excretion estimation is time consuming, cumbersome and often inaccurate. We reasoned that the urinary protein/creatinine ratio in a single voided urine sample should correlate well with 24 hours urine protein excretion. In this study 100 children, 25 in control group without renal disease and 75 in study group with renal disease, were studied and their 24 hours urine protein excretion rates were compared to spot urine protein/creatinine ratios. We inferred that the determination of protein/creatinine ratio is a single urine sample obtained during normal day time activity, when properly interpreted by taking into consideration the effect of different rates of creatinine excretion, can replace the 24 hours urine collection in the clinical quantification of proteinuria in the follow up evaluation. In the presence of stable renal function a protein/creatinine ratio of more than 3.0 (mg/mg) can be taken to represent "Nephrotic range" proteinuria, and a ratio of less than 0.3 is within normal limits.

NEP/07. URINE PROTEIN SELECTIVITY AND STEROID RESPONSE IN NEPHROTIC SYNDROME

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Nephrotic Syndrome is the most frequent presentation of persistent glomerular disease in childhood. 56 cases of Nephrotic syndrome were studied between 2 and 6 years (60%). Sex ratio showed male predominance (2:1). Commonest presenting complaints were generalized edema and oliguria. Atypical presentations like hypertension were noted in one fourth of the cases, half of these had transient mild hypertension. Haematuria as the presenting complaint was seen in two cases. A case of SLE presented with arthralgia and rash.

Serum cholesterol was increased in 92% of the cases. Serum protein electrophoresis showed a marked decrease in Albumin and significant increase all of them who responded to Steroids. In remaining two-fifth of the cases with non selective proteinuria, only about half of them were steroid responsive.

Renal biopsy was done in one-fourth of the cases who were either Steroid resistance or dependent cases. HPE revealed MPGN in 6 cases, MCNS in 4 cases, mesangio-capillary in two cases, FSG and CGN in one case each.

Among the Steroid responsive group, 96% of cases responded in 4 weeks. 27 cases from this group were followed for more than 6 months, out of these 14 had infrequent relapses and 3 cases had frequent relapses.

One-fourth of the cases had associated infection as a complication at the time of presentation. Half of them had UTI. Mortality during the study period was - 2 cases died of progressive renal failure and one case secondary to sepsis and peritonitis.

GASTROENTEROLOGY

*GTR/01. DISCRIMINATORY FEATURES AND OUTCOME OF BILIARY ATRESIA AND NEONATAL HEPATITIS

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The final diagnosis in 66 babies presenting with obstructive jaundice were i) Extrahepatic Biliary Atresia (EHBA) (n=37) ii) Choledochal cyst (n=2) iii) Biliary hypoplasia (n=3) iv) Neonatal hepatitis (n=2ldren) of which total restriction was practiced in 6.8% and partial in 39.5% top milk was the most common food item with held (41.8%). Fluid restriction was practiced in 9.8% cases, oral rehydration therapy was given in 47.5% children. Maximum awareness about type of ORT was regarding commercially available packets (41.5%) followed by home made solution (30.2%), only 5.8% knew about rice water. Mass media and health workers were the important sources for propagation of knowledge about ORS to the masses (14.7% and 13.1% respectively). For treatment of diarrhoea, 44.5% visited private practitioners and only a few went to PHC (4.9%). Remedies were found to be practiced in a large percentage of cases (16.5%), amongst which ghutti was used in 54.5%, opium by 12.4% and even witch craft was practiced by 8.8% cases.

*GTR/02. MANAGEMENT OF DIARRHOEAL DISEASES IN COMMUNITY - A FIELD SURVEY

Alka Sethi, D. K. Sharma, B. K Garg, V. K. Upadhayay

A total number of 2000 children in the age group 0-3 years, from Daurala Area of Meerut District were included in the present study. Their mothers or other family members taking care of the child were interviewed regarding management of diarrhoeal diseases, and it was observed that food restriction during diarrhoea was widely practised (in 46.3% children) of which total restriction was practised in 6.8% and partial in 39.5% top milk was the most common food item with held (41.5%). Fluid restriction was practised in 9.8% cases, oral rehydration therapy was given in 47.5% children. Maximum awareness about type of ORT was regarding commercially available packets (41.5%) followed by home made solution (30.2%), only 5.8% knew about rice water. Mass media and health workers were the important sources for propagation of knowledge about ORS to the masses (14.7% and 13.1% respectively). For treatment of diarrhoea, 44.5% visited private practioners and only a few went to PHC (4.9%). Remedies were found to be practised in a large percentage of cases (16.5%), amongst which ghutti was used in 54.5%, opium by 12.4% and even witch craft was practised by 8.8% cases.

*GTR/03. DOES BREAST FEEDING INFLUENCE MORTALITY IN CHILDREN HOSPITALIZED WITH DIARRHEA ?

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The association between breast feeding and mortality in children hospitalized with diarrhea was investigated in a prospective manner in 309 subjects below 18 months of age. In multivariate logistic regression analysis, 36 cases who expired were compared with 273 controls who were discharged in a satisfactory condition. Breast feeding had a strong protective effect against mortality even after allowance was made for onfounding variables (including nutritional status, chronicity of illness, associated non-enteral infections) and a possible bias of interruption

of breast feeding as an early consequence of the terminal illness. The adjusted odd's ratio (OR) and 95% confidence intervals (95% CI) for the protective effect were 2.7 and 2.1 to 3.6 respectively. The adjusted OR's (95% CI's) were 6.0 (3.6 - 10.2), 2.6(2.0-3.4), and 1.8(1.4-2.5) for the age intervals 0-6, 7-12 and 13-18 monts, respectively ($p<0.001$, <0.01, and <0.05, respectively). Further stratified analyses suggested a greater benefit in children with severe wasting, severe stunting, protracted illness and diarrhea as the sole infection. It is concluded that in children upto 18 months of age, breast feeding offers substantial protection against death in children hospitalized with diarrhea.

GTR/04. REVIEW OF ACID PEPTIC DISEASE IN CHILDHOOD

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The exact prevalence of Acid Peptic disease in Childhood in Andhra Pradesh is not known though it is a common disease in adult population. An attempt is made to review the existing information on the topic. Children with duo denal ulcers have a higher mean maximal acid output (MAO) and peak acid out put (PAO) than controls. Basal acid secretion also tends to be greater.

In infancy, 80% of all ulcers are secondary to some pre-existing condition. The over all mortality rates may range from 14% to 84% depending upon the pre-existing condition. After infancy, atleast 70% of the ulcers are primary. The incidence of duodenal and gastric ulcers patients less than 20 years old is approximately 0.1 per 1000 person years. In New York, the incidence in children was 1.7%. This prevalence is similar to that of 1.9% in women 15 to 64 years age group. Hypoxia, Acidemia, Sepsis, RDS and CNS disease have all been seen in association with gastric perforation in the 1st day of life. The association of CAMPYLO BACTER like organisms (CLOS) and gastritis was reported. Additional studies are needed to assess the role of CLO in the development of Acid Peptic disease. The role of H2 receptor antagonists like CIMETIDINE and RANITIDINE in Childhood ulcers is discussed. The applicability of new drugs like SUCRALFATE Tripotasium Dicitro Bisumuthrate (TDB) PGE1, PGE2 and OMEPRAZOLE are reviewed. The experiences of Endoscopists in the diagnosis of Acid Peptic disease in Childhood is discussed.

GTR/05. FULMINANT VIRAL HEPATITIS IN CHILDREN

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In a study carried out on 54 children, suspected to have viral hepatitis, attending the Pediatric O.P.D. or admitted to L.N.J.P. Hospital, New Delhi, 8 children had a fulminant course. Six of these children expired. Non A Non B virus was found to be the commonest etiological agent associated with fulminant hepatic failure (62.5%). Interestingly, 50% of the fulminant hepatitis cases were HBV carriers with superimposed Non A Non B infection. The median duration of illness and alteration in sensorium was 4 and 1 day respectively. The liver span was found to be decreased in 6 (75%) cases, splenomegaly in 4 (50%) cases and 1 patient had free fluid in abdomen. 4 patients had upper gastrointestinal tract bleeding. No predilection for any age group or sex was observed.

The biochemical abnormalities were considerably higher in the fulminant cases. There were only 2 survivors of which one showed a complete recovery (Hepatitis B carrier with NANB infec-

tion) and the other had a relapse. Grossly speaking, the mortality in the 3 etiological groups appeared comparable.

GTR/06. EVALUATION OF A CHICKEN BASED DIET IN THE MANAGEMENT OF PERSISTENT DIARRHOEA

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In a study period of 18 months, 25 babies with persistent diarrhoea (loose motions > 15 days) were managed with a chicken based balanced diet, specially prepared for the study in a precooked, easily miscible, dehydrated powder form. 25 other babies with persistent diarrhoea were managed with either a soya based diet (Nusobee, Wockhardt Ltd.) (n=16) and a home made dal rice based diet (n=9). The diets were prepared to give similar concentrations of protein and calories, namely 2.5 - gi% protein and 75 calories%. All groups were well matched in respect to mean age, duration of illness, degree of malnutrition and breast feeding status. This excludes 10 babies who responded to a milk challenge after initial therapy. It also excludes 2 who died within 48 hours of starting dietetic management. The principles of specific and symptomatic management were the same in all the groups and included intravenous fluids (80%), blood transfusions (24%), plasma transfusions (12%) and systemic antibiotics (62%).

The acceptance was best for chicken based diet and poorest for soya. Dal rice was generally accepted well only in babies older than 6 months. 2 babies of the dal rice group and 4 babies of the soya group deteriorated while on their dietetic management (failure rate of 22% and 25% respectively), but responded on changing to the chicken based diet. On the other hand, 3 babies did not respond to chicken (failure rate 10.7%). However, they did not respond to soya or dal rice either. These babies were subsequently salvaged with total parenteral nutrition. There were no further deaths in any groups. All babies were discharged with a mean hospital stay of 13.84 + 16.22 days. However, 9 babies (18%) needed readmission due to diarrhoea within 6 months after discharge. They all responded to further dietetic and specific management.

In conclusion, a chicken based diet was found to be superior in the dietetic management of persistent diarrhoea. Methods of making this widely available within reasonable cost are now under study.

GTR/07. STUDY OF CONGENITAL GASTROINTESTINAL MALFORMATIONS IN NEONATES AT J.J.M. MEDICAL COLLEGE-ATTACHED HOSPITALS, DAVANGERE

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Study of neonates admitted to Neonatology and pediatric surgical wards in J.J.M. Medical College attached hospital from April 1989 to March 1990, was done to evaluate the incidence, pattern and clinical manifestations of congenital anomalies of gastrointestinal tract.

The incidence was found to be 4.06 per 1000 and of the 50 neonates found with gastrointestinal tract malformations M:F ratio was 5:4. It was observed that congenital gastrointestinal malformations constitute a sizable proportion of neonatal emergencies.

Of all, 46% were anorectal anomalies, with sex predilection of M:F 8:1 in high anorectal malformations. Among others 10% had esophageal atresia, 2% duodenal atresia, 6% ileal atresia, 4% volvulus, 6% meconium plug syndrome, 2%

colonic atresia, 2% persistent vitellointestinal duct, 12% hirschsprung's disease, 6% abdominal wall defects and 2% diaphragmatic hernia.

Out of the 50, 39 were subjected to surgery and 11 were managed conservatively as the latter cases were not fit for surgery. 28 neonates (56%) who underwent surgery recovered post-operatively and were discharged. 11 (22%) died post-operatively due to septicemia & pulmonary insufficiency.

In conclusion, we recommend collaborative care provided by the neonatologists, pediatricians, anesthetists and pediatric surgeons for these patients for a favorable outcome. Proper parental counselling of malformed babies pointing to genetic transmissions will be helpful in reducing the incidence of congenital malformations.

GTR/08. PREVALENCE OF GIT INFECTION IN SEVERELY MALNOURISHED CHILDREN

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105 children suffering from PEM Grade 4 & 3 of malnutrition, thoroughly screened for GIT infection, revealed that 75.24% of them were suffering from various types of GIT infections, 39.1% had acute and 60.9% had chronic gut infections. Bacterial etiology was commonly seen in acute infections (50%) while protozoal etiology was responsible for majority of the chronic infections. Diarrhea was the most common presenting complaint (65.2%), followed by pain abdomen (40.4%), blood & mucus in stool in (32.2%), vomiting (29.1%) and oral thrush (11.4%).

These infections were commonly seen in children below 1 year age and prevalence of gut infection increased with increasing severity of malnutrition.

Higher incidence of gut infection was observed in those children who belonged to poor socioeconomic group or were not breast fed or were weaned at a later date.

Early recognition of GIT infection in severely malnourished children may prove to be beneficial in reducing the morbidity and mortality in these children.

GTR/09. PSEUDO COLITIS IN CHILDREN

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The incidences of prolonged colitis among the various types of diarrhoeal disorders vary from 16 to 28% and upto 10% of these may prove protracted and fatal if appropriate and timely intensive care is not given. Stool examination, proctosigmoidoscopy or fibreoptic colonoscopy and large bowel mucosal biopsy and stool microbiological studies will help sorting out the cause for prolonged colitis in infancy and childhood which may fall into specific (infections/non-infections), pseudo or non-specific colitis types; Atleast 14
cases of pseudo-colitis were identified among prolonged colitis in infants and children in a period of 9 months from December 89 to August 90. 3 patients were below 6 months, 2 between 6 and 12 months, 4 between 12 and 36 months and 5 above 3 years of age. Mean duration of diarrhoeal illness was 11 days. 8 patients presented with pain abdomen, tenesmus and blood and mucus per rectum, 5 presented with formed stools coated with mucus and painless frank post defecational bleed now and then of 3 weeks to

3 months duration, recurrent exaggerated gastrocolic reflex with pain abdomen and persistent rectal prolapse in one.

Atleast thrice stool microscopy showed insignificant exudates but nil Trophozoites or Protozoa, stool culture was negative twice, sigmoidoscopy showing mucosal patchy erosions without significant oedema with easy contact bleed and covered by numerous live Trichuris Trichura in 2, solitary non specific ulcer in one, segmental enteritis (Regional ileitis) in 1, cow's milk allergy colitis in one, leukaemic infiltration in one and rectosigmoid polyps in 8. All patients earlier received lot of empirical antibiotics before being referred to our department. The value of proctosigmoidoscopy/colonoscopy and stool microbiologic studies are stressed in the specific diagnosis of pseudocolitis. It is concluded that the physician and surgeons while treating patients with prolonged colitis should be aware of the possibility of Pseudocolitis which can be easily diagnosed by proctosigmoidoscopy to avoid unnecessary prolongation of the problem and empirical and irrational polypharmacy schedules.

TUBERCULOSIS / INFECTIOUS DISEASES

*TB/01. SALMONELLOSIS IN NEWBORN

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This study was conducted at Kasturba Medical College and Hospital during the period from January 1988 to December 1989. During the study period 174 cases of neonatal diarrhoea were detected. salmonella gastroenteritis was diagnosed in 62 neonates. (39.4%) of bacterial diarrheas. Incidence of Salmonella infection was equal in both sexes, and was more in the second half of the year. The infection was more severe in SGA and preterm babies than in term AGAs. In some term AGA babies the diarrhoea was self limiting. Salmonella gastroenteritis carries a risk of systemic complication. Systemic complication noted in our study are as follows-Septicemia 4.76%, Meningitis 1.56%, NEC 1.57% and Septic Arthritis 1.58. In proven Salmonella meningitis the mortality was 100%. Antibiotic sensitivity pattern of salmonella organism was resistant to Ampicillin (100%); Chloromycetin (100%) and Septran (96.77%) but was sensitive to Gentamicin (93.42%) Systemic complication of Salmonella gastroenteritis needs vigorous treatment with use of 3rd generation cephalosporins and Gentamicin. It is essential to repeat a stool culture in Term AGA babies in whom antibiotics are withheld because of the mild nature of symptoms, to prove that there is no carrier state.

*TB/02. SEROLOGY OF TUBERCULOSIS AS A DIAGNOSTIC AID IN CHILDHOOD PULMONARY TUBERCULOSIS

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A study was conducted in J. J. Group of Hospital where a total of 63 cases of Pulmonary Tuberculosis in the Paediatric Age groups were studied and were sub-classified into the following groups consisting of Gr.I Primary complex, (57.1%) Gr.II Fibrocaseous TB (19.04) Gr. III Segmental lesion (14.28%) Gr. IV Miliary T.B. (9.52%). The sera of these patients were studied for T.B. Antigens and Antibodies levels, and were compared with the controls in the same age group.

The method adopted was solid phase Radioimmuno assay which is sensitive enough to detect 1 x 10-3 organism Per Ml (1 Ng/ml and sonicate antigen) and 1 microgram/ml of anti T.B. and antibody. The result obtained were further classified as having only Antigen detection, only antibody detected, both or none.

After surveying the various results we come to a conclusion that Antigen detection shows some promise in the serological diagnosis while antibody detection is not of much significance. The state of antigen and antibodies detection depends on the stage of disease Process and the type of tuberculous involvement and many other variables.

*TB/03. CLINICO - BACTERIOLOGICAL PROFILE OF MULTI-DRUG RESISTANT SALMONELLA TYPHI OUTBREAK IN DELHI

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Resistance of Salmonella typhi to chloramphenicol and other commonly used drugs has been

shown to be increasing over the past few years. In this paper we describe an outbreak of resistant S. Typhi which Delhi experienced this year.

A total of 61 blood culture positive cases of typhoid fever treated till September this year (1990) were analyzed. Forty six cases were admitted while rest were managed from O.P.D. The duration of fever prior to first hospital visit ranged from 2-35 days. Some of the special features of the present episode were: (a) Most of the patients presented with abrupt onset of high fever in contrast to step-ladder pattern seen in typhoid. (b) Inspite of prolonged fever most of cases showed very little toxemia. (c) Blood cultures were positive even in later weeks of fever. Six patient presented with one or more of the complications like myocarditis (4), encephalopathy (4), hepatitis (3).

This year (79%) of Salmonella typhi were resistant to chloramphenicol in contrast to 5% in 1989. The organisms were resistant not only to chloramphenicol but also to other commonly used drugs such as ampicillin (66%) and co-trimoxazole (63%). However sensitivity to following drugs remained fairly high: gentamicin (90%), amikacin (77%), cefotaxime (52%), ceftazidime (66%) and ofloxacin (92%).

Various drugs like amoxycillin with Clavulinic acid (Augmentin)Ceftrioxone (Monocef), cefotaxime, amikacin, ofloxacin and ciprofloxacin were used either alone or in combination. This list includes quinolone derivatives though they are known to effect growing cartilage in experimental animals. These drugs had to be used because of cost limitation and parenteral use of 3rd generation cephalosporins. A satisfactory response was observed with ofloxacin, ciprofloxicin and ceftrioxone.

*TB/04. COMPARATIVE EFFICACY OF BCG TEST & MANTOUX TEST IN THE DIAGNOSIS OF TUBERCULAR INFECTION UNDER 5 YEARS IN CONTACT WITH AN OPEN CASE OF TUBERCULOSIS

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One hundred children below 5 years of age and living close contact with an open case of tuberculosis in and around the Udaipur city were evaluated for presence of tubercular infection by combined testing with BCG and Mantoux test. 72% of them showed positive BCG test while only 27% revealed positive Mantoux test.

59.52% of nutritionally normal children revealed positive BCG test which was higher in comparison to Mantoux test (11.9% positive). Positivity of BCG test was higher even in severe PEM (75% & 66.6% in PEM Grade 3 & 4) as compared to Mantoux test (Only 41.6% & 12.5% in PEM Grade 4 & 3 respectively.

False positivity and false negativity of results was negligible with BCG test as compared to Mantoux test.

Higher positivity, specificity and safety of BCG test in the diagnosis of tubercular infection highlights it's importance in not only in prevention of tuberculosis but also as a diagnostic tool specially below 5 years of age. This would help in reducing morbidity and mortality because of tuberculosis in our country.

*TB/05. EVALUATION OF THE EFFICACY AND ADVERSE EFFECTS OF TWO SIX MONTHLY SHORT-COURSE CHEMOTHERAPY REGIMENS FOR THE TREATMENT OF PULMONARY PRIMARY COMPLEX IN CHILDREN

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Two short course chemotherapy regimens 6HR and 2HRZ 4HR were evaluated for their efficacy and hepatotoxicy among 158 children below the age of 13 years. The diagnosis was based on essential criteria of i) Symptoms of more than two weeks ii) positive tuberculin test and iii) suggestive x-ray chest. Isoniazid, rifampicin and pyrazinamide were used in the dose of 10, 12 and 30mg/kg/day respectively. Efficacy was determined by x-ray chest at 3 months interval for one year and for hepatotoxicity SGOT, SGPT were done before therapy and every month for two months. 60% of the children were in the age group of 5-12 years. X-ray chest showed in 38%, 16% and 46% nodal, parenchymal and combined lesion respectively. All patients showed definite symptomatic improvement after 15 days and were symptom free at one month. 98% of the children had complete clearance of the lesion at 6 months with two drug regimen as compared to 92% with three drug regimen. In the groups which had moderate to significant clearance, these figures were 100% and 93% respectively. The therapy was stopped in all at 6 months as the lesion had become static. Further analysis indicated that 7 to 8% children who took 9 months for complete clearance inspite of being on three drug regimens it was found that they had nodal lesion which takes a longer time to clear. In terms of hepatotoxicity, no child developed overt jaundice but enzyme rise was significantly more ($p < 0.001$) at 1 and 2 months in three drug regimen. Hence for the treatment of PPC two drug regimen is sufficient.

*TB/06. HUMORAL IMMUNITY IN MEASLES - CORRELATION WITH AGE NUTRITION AND COMPLICATIONS

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150 children clinically diagnosed as measles (6 months - 7 years) from a public hospital based population (Indoor/OPD) from May 1986 - April 1987 were selected for study. Only those with a typical rash and no history of previous measles vaccine were taken up. They were clinically monitored and were subjected to HI antibody studies (by Lenette's method) four weeks after the appearance of rash. Out of a large number of patients only 150 consented for the blood collection and came at the appropriate time.

28% were < 1 yr of age; 60.6% were between 1-3 years; 8.6% between 3-5 years and 2.6 were > 5 years. Mild PEM was seen in 36.6% and severe PEM in 13.3% Good nutrition was seen in 43.3% and 8% were overnourished.

A significant relationship between age and antibody titres was seen. All children above 3 years had higher titres and lesser complications. There was a good correlation of the range of antibodies and the degree of complications. Cases with a titre of 1:256 and above had mild or no complications.

Significant titres > 1:32 were seen in 94% of cases. Inspite of grade I and grade II PEM, significant antibody titres were seen in all cases. In grade III, 75% showed good titres. This sharply fell to 14% in grade IV. This supports the well documented fact that humoral antibody is preserved in milder forms of malnutrition.

Inspite of good antibody titres 35% of well nourished children showed some form of complication, though of mild variety. This can be explained on the basis of reduced CMI in measles disease.

*TB/07. INTRACRANIAL TUBERCULOSIS IN CHILDREN - A C.T. SCAN STUDY

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In 60 cases of Intracranial Tuberculosis (48 of Tuberculous Meningitis and 12 of Tuberculoma), the C. T. Scan picture was correlated with the clinical findings. The children were from 4 months to 12 years of age, and were mostly in Stage-II and Stage III Tuberculous Meningitis. However, one case belonged to Stage I of the Udani classification. Hydrocephalus was the most frequent C. T. Scan finding and was found in 83.3% cases - the block most frequently was at the basal cisterns. Basal exudates enhancing on I/V contrast were seen in 58.3% of the cases. In 7 cases (14.6%), tuberculomas were seen with tuberculous meningitis. Periventricular hypodensities were seen in 17 (35.4%) cases and infarcts in 13 (27.08%), and 11 of these patients were unconscious and had other neurologic deficits. Only 1 case, who was in Stage II, had a normal scan. 9 cases of Tuberculoma without Meningitis presented with convulsions and was found to have a supra-tentorial lesions on the scan - 3 cases presented with ataxia and were found to have an infratentorial lesion on the scan.

TB/08. PERFORATED TYPHOID ENTERITIS IN CHILDREN

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Typhoid fever is a persistent global health problem with a devastating socioeconomic impact on the developing countries of the world. Intestinal perforation with its resultant morbidity and mortality is the most dreaded complication of typhoid fever.

65 consecutive cases ranging from 5-15 years of age with typhoid perforation of the gut admitted to the University hospital, Banaras Hindu University, were studied prospectively over a 3 year period. There were 42 males and 23 females. The cases were diagnosed on the basis of history, clinical examination, exploratory findings, histopathology, Widal test and blood culture. Presenting symptoms were fever, abdominal pain, vomiting and either diarrhoea or constipation. 45 patients (69%) had perforation in the second week of fever. 53 patients (81 percent) came 48-96 hours after the perforation. All patients were subjected to surgery. 57 patients (88 percent) underwent debridement of the perforation and 2 layer bowel closure. 8 patients (12 percent) underwent other surgical procedures. Postoperative morbidity included intra-abdominal abscess, wound dehiscence, fecal fistula formation, septicaemia and pulmonary complications.

The mortality rate in this study was 25 percent and was adversely influenced by the increasing duration of perforation and the presence of shock, uraemia, and fecal peritonitis. Most of the deaths were attributed to overwhelming sepsis which progressed despite aggressive operative management and antibiotic therapy. The key to improved survival in these patients thus lies not in a better operation or improved peri-operative care but in the prevention of typhoid fever by providing safe drinking water and improved sanitation methods for the community.

TB/09. CONGENITAL FILARIAL LYMPHOEDEMA

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Congenital filariasis means transfer of filarial infection from mother to the fetus either by transplacental or trans-uterine route. Transplacental transmission of microfilaria has been demonstrated in the cord blood of microfilaraemic mothers. However, some workers have failed to demonstrate this. Chronic manifestations are a rarity in children. The youngest patient with filarial lymphoedema reported earlier was a 28 month old child. In this paper we report a very rare case of neonate born with congenital filarial lymphoedema from a filarial endemic area. A neonate with congenital lymphoedema of right foot was born to a mother having lymphoedema of both lower limbs. Mother and newborn both had filarial antibodies (IgG) in sera at birth detected by Elisa test using microfilarial excretory secretory antigen. In congenital filarial lymphoedema (milroy's disease) the lymphoedema does not reduce but increases as the child grows and starts walking. This possibility was excluded in view of considerable regression of the swelling on follow up at 11 months of age, persistence of filarial antibodies till 7 months of age and clinical response to diethyl carbamazine. All these further substantiated its filarial etiology. Coincidentally the father also has hydrocele with presence of filarial antibodies in the serum. Hydrocele with presence of filarial antibodies in the serum. Hydrocele is the commonest sign of chronic bancroftian filariasis in most parts of the world.

TB/10. ASSOCIATION OF GLOMERULONEPHROPATHIES WITH FILARIASIS IN CHILDREN

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There have been reports of kidney involvement associated with filariasis. Much of the work done in this field is based on experimental animals. Very few studies have been done in human beings and that too in adults. The present study was done to find out the association of filariasis and Glomerulo nephropathies in paediatric population in a filarial endemic area.

A total of 24 patients were studied, out of which 8 patients were of acute glomerulonephritis and 16 patients were of nephrotic syndrome. 10 controls each from endemic and non-endemic areas were also studied. The results were as follows:

	Total Cases	Antibody positive	%
1. Acute Glomerulonephritis	8	3*	37.5
2. Nephrotic Syndrome	16	11	69.0
3. Endemic controls	10	1	10.0
4. Non-endemic controls	10	-	0.0

* One case of acute glomerulonephritis presented 4 months later with classical tropical pulmonary eosinophilia.

The association of positive filarial antibodies in glomerulo nephropathies in paediatrics population needs to be studied further.

TB/11. POST MEASLES COMPLICATIONS - A STUDY OF 100 CASES

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Despite production of vaccine, measles continues to be a scourge of the developing world.

The present study was undertaken to determine the types and frequency of complications following measles, and evaluate the relationship of nutritional socio-economic and immunological status on their outcome.

The study of 100 children admitted for complications following measles was performed at Kasturba Hospital Bombay between August, 1988 and Feb. 1989.

A careful analysis of frequency of various complications regarding age, sex and nutritional status was done. Mortality and immunological parameters like T cell function, immunoglobulin levels (IgG, IgA, IgM) were also analyzed. Socio-economic status and prior antibiotic therapy were likewise assessed.

The incidence of complications was marginally higher in males (1.38 : 1); complications were significantly higher (69%) below the age of two years (p is less than 0.001).

Respiratory complications (52.2%) were by far the commonest, followed by gastro intestinal (25.47%) otitis media (6.36%) and encephalitis (3.82%). Flare up of tuberculosis was seen in 3.18%.

Complications were significantly more frequent among the malnourished (75%) (P is less than 0.005). In addition to respiratory and gastrointestinal complications, there was a preponderance of otitis media, purulent conjunctivitis and flare of tuberculosis in this group of children.

A significantly higher incidents (70.23%) was found among the lower socio-economic classes (P is less than 0.005).

Patients receiving antibiotics prior to admission for a shorter duration (less than 5 days) had bacterial complications such as Bronchopneumonia dysentery and otitis media significantly more often (P is less than 0.001).

The mortality rate in our series was 5%, with bronchopneumonia being the commonest cause of death.

The absolute lymphocyte count was significantly lower in those who succumbed (2011 +(-) 591) (mean +(-) S.D.) as compared to survivors. (3041 +(-) 1142) (P is less than 0.001).

Immunoglobulin levels did not differ markedly in patients who recovered as compared to those who expired though IgA levels were marginally lower in the latter.

TB/12. ENDEMICITY OF POLIOMYELITIS IN THANJAVUR AREA

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This preliminary study was to evolve the baseline data for the rural based teaching hospital, attached to Thanjavur Medical College. There were 564 cases of Poliomyelitis during January 1986 to June 1990, constituting an average of 1.5% of Pediatric admissions. Among them 354 (62.76%) were from Thanjavur District, 188 (33.33%) were from Trichy District and others from the border areas. 343 (60.81%) were males and 221 (39.19%) were females. 428 (75.88%) were children less than 2 years and 31 (5.49%) were less than 6 months.

371 (65.77%) reported within 3 days of onset. 44.68% were un-immunized and 19.68% were given 3 dose of OPV. 95.39% had fever and 23.76% were given intramuscular injection during

the febrile preparalytic period.

Spinal involvement was seen in 435 (77.12%), bulbospinal in 114 (20.21%), polio encephalitis in 15 (2.65%), and respiratory paralysis in 68 (12.05%).

Mortality rate was 10.28%, children less than one year were victims of bulbar involvement and mortality was more in them.

In 1987, there was a spurt in the cases (i.e.) 289 (51.24%) constituting 4.89% of pediatric admissions. Similar spurts were recorded in 1981 and 1983, 370 and 373 cases respectively.

Every year more cases were reported from February to June.

Virological studies could not be done for want of facilities.

Though the hospital caters to the sections of populations poor in socioeconomic and literacy status, compared to the 1985 data (32%) the awareness of immunization has increased now (68%).

In general, there is a falling trend in the attack rate and increasing trend in the immunization coverage in the hospital and in the entire district. This may be attributed to the launching of universal immunization programme, involvement of Multipurpose Health Workers, Health Education Campaigns and better transport facilities in Thanjavur District.

TB/13. IMMUNE RESPONSE OF INACTIVATED POLIO VACCINE OF ENHANCED POTENCY IN INDIAN CHILDREN

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India dominates the global picture of poliomyelitis accounting for more than 50% of the cases reported annually. This is inspite of using oral polio vaccine for more than a decade. Poor seroconversion to OPV in developing tropical countries is well known even after 3 properly spaced doses. Enhance potency IPV (injectable polio vaccine) containing 40, 8 and 32 D antigen units of type 1, 2 and 3 poliovirus respectively has been found to be an excellent immunogenic agent and is thermostable. Therefore, this study was undertaken to find out the seroresponse following IPV administration in Indian children. A total of 110 children attending Immunization Clinic of Kalawati Saran Children's Hospital formed the material of the present study. These children were randomly allocated into one of the two subgroups. Group A (55 infants) were given 2 doses of IPV at 4 weeks interval starting from 6 weeks of age. Group B consisted of 55 infants matched with the other group in terms of age, sex, nutritional and socioeconomic status. Infants in this group received 2 doses of IPV at 8 weeks interval. Blood samples were taken for antibody determination at the time of the first dose and 4-6 weeks after the second dose. Paired sera were tested for polio virus antibodies using the microneutralization test. Only 52 patients could be followed up for final analysis. The results of the present study revealed that the pre-immunization (maternal) antibody titres in the children above 8 weeks of age were lower than those in 6-7 week old children. Pre-immunization antibody titres against type 1 were positive in maximum number of children followed by type II & III. Out of the 52 paired sera which were tested, 92.4% infants sero-converted to type I and II and 88.3% to type III. Poliovirus, while 82.3% children responded to all three types of poliovirus after the two doses of the vaccine. In group A out of 30 patients 93.3% infants sero-converted to type I and II while 86.6% seroconverted to type III poliovirus. In group B out of 22 patients 90.9% children responded to all the types. There was no

statistically significant difference in the seroconversion rates of infants who were given 2 doses of the vaccine at 4 weeks or 8 weeks intervals. There was no significant difference in the seroconversion in infants who were given IPV at 6-7 weeks compared to infants given IPV after 8 weeks of age.

TB/14. CHANGING TRENDS IN ENTERIC FEVER

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During the recent epidemic of enteric fever a sizable number of children failed to respond to routinely used antibiotics like chloramphenicol, amoxycillin and Sulphamethoxasol - trimethoprim and seemed to take longer time to respond. This prompted us to undertake a study of all indoor cases with regard to their clinical course and response to therapy. The study group included 75 cases of enteric fever admitted to a paediatric ward and whose diagnosis was confirmed either on clot culture or serology.

As many as 24% of our patients were below 5 years of age. Male to Female ratio was 1.4 : 1. Besides fever other symptoms observed were vomiting (48%), pain in abdomen (36%) and gastro intestinal bleed (13%). Hepato-splenomegaly was a common observation whereas toxemia and significant anemia (< 8 Gm%) were observed in 40% and 13.3% of children respectively.

Leucopenia was noted in 61% of Patient, whereas positive clot culture and serology in 48% and 62.6% of patients respectively.

Only 40% responded to routinely used drugs given singly. However they took much longer time to respond. Failure to respond to routinely used antibiotics in 60% necessitated the use of combination of drugs and or other antimicrobials. Good response was observed with ciprofloxacillin, gentamicin and cefuroxime.

An alarming high rate of complication (26%) was observed in present study such as paralytic ileus (8%), encephalitis, myocarditis with heart block etc. Only one patient expired following surgery for intestinal perforation.

This present paper highlights the high incidence of complications and resistance to commonly used antimicrobials.

TB/15. ANTI-NUCLEAR ANTIBODIES IN CHILDREN ON ISONIAZID THERAPY

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This cross-sectional study aims at determining the incidence and significance of auto-immunity to nuclear antigens caused by the drug isoniazid in children. The study group included 177 children between the ages of 6 mths and 13 years. The control group included 46 children with tuberculosis, and 34 children without tuberculosis. Patients who showed presence of antinuclear antibodies were further studied for other nuclear antibodies (ds-DNA, recovery except for one who developed pneumonitis which responded to antibiotics. Pneumovax could not be arranged for any of these patients due to financial constraints, however penidura prophylaxis was given. All the 10 patients of hemoglobinopathies had a significant reduction in transfusion requirement following splenectomy. Of the 3 patients of ITP, there was 66% response, while amongst the 3 kalaazar patients, initial response was seen in all however one

patient had a relapse after 6 months of splenectomy. Patients with spherocytosis had 100% response. The child having benign histiocytosis also did very well and was apparently cured. Overwhelming post splenectomy infection was observed in 4 of these 20 patients (20%). 2 patients were lost to follow up which ranged from 6 months to 2-1/2 years. One child died of an unexplained cause at home after 1-1/2 years of splenectomy. Thus in conclusion, in carefully selected patients, therapeutic splenectomy can have desirable effects provided proper care is offered in the event of slightest infection post operatively. Also, whenever possible vaccination against pneumococci and H influenza must be emphasized.

HO/14. FULMINANT COURSE OF ACUTE VIRAL HEPATITIS IN PRESENCE OF GLUCOSE-6-PHOSPHATE DEHYDROGENASE DEFICIENCY

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Eleven boys with glucose-6-phosphate dehydrogenase deficiency (G-6-PD) between the ages 7 to 11 years (Mean 8.9 years) were admitted to the children's ward of All India Institute of Medical Sciences with hepatitis. These boys presented with moderate to high grade fever of 3 to 9 days(mean 5.9 days) along with sudden and severe jaundice in all, high colored urine in 8, vomiting and altered sensorium in 4 and oliguria in 3 children. Five of these children had received chloroquine for a possible diagnosis of Malaria, while one child received cotrimoxazole prior to admission. Hepatomegaly of 3 to 5 cm. was present in all while the sss-DNA, ENA) and non-nuclear antibodies (Coomb's Test, VDRL, HBsAg, R.A. factor), hematological profile, urine examination and liver function tests.

19 patients (10.7%) were positive for ANA (titre range 1:20-1:80). The mean age of these patients was 5.4 yrs (range 2.5-12 yrs) with a male to female ratio of 1.1:1. Their duration of treatment ranged from 7 days to 9 months (mean 4.22 mths). 6/19 showed a speckled pattern of ANA and had antibodies to extractable nuclear antigen (1:512). 17/19 had antibodies to ssDNA while none had antibodies to dsDNA. Other serological abnormalities detected included R.A. factor positive (2 cases) and Hbsag (1 case). Nutritional status, reactivity to tuberculin test, regularity of therapy and concurrent or previous infection were not found to significantly correlate with presence of ANA. These patients were followed up for a period of 6 mths, and none showed any clinical evidence of lupus or urine abnormalities.

TB/16. CLINICAL PROFILE OF CHILDHOOD TUBERCULOSIS WITH SPECIAL REFERENCE TO BCG AS A DIAGNOSTIC AID

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Tuberculosis still remains a major public health problem in developing countries, including India. The role of BCG as a diagnostic aid in malnourished and severe forms of Tuberculosis has been stressed by many workers. Approximately 9% of admissions and 20% of out-patients of Paediatric department used to be the victims of various forms of Tuberculosis. Hence, this study has been undertaken to evaluate the clinical profile of Childhood Tuberculosis and to establish the role of BCG as a diagnostic tool.

A total of 125 children below the age of 10 years suffering from various forms of Tuberculosis

attending Paediatric OPD/ received inpatient care from July 1989 to June 1990 constituted the study material. Clinical symptoms, nutritional and previous BCG status were recorded. After thorough clinical examination, investigations were carried out to establish the diagnosis. Mantoux was done in all patients. BCG diagnostic was given in 92 children, who were Mantoux negative. Mantoux and BCG reactions were analyzed with nutritional status and severity of disease.

There were 62 male and 63 female children. Majority of them (52%) were between 2-5 years. 54.6% of cases were suffering from various forms of malnutrition. Constitutional symptoms like fever (48%), loss of appetite (64%) and failure to thrive (48%) were the main presenting features. Maximum cases (48%) were suffering from intrathoracic form of Tuberculosis followed by lymphadenitis (14.4%). Severe forms like meningoencephalitis and disseminated Tuberculosis were seen in 14.4% and 10.4% respectively. In various forms of malnutrition, Mantoux was positive only in 16.1% of cases whereas BCG diagnostic in 74.5% of cases. Mantoux positivity was found to be 15.3% to 50.0% compared to 66.5% to 76.9% with BCG in severe forms of Tuberculosis. Previous BCG status has not influenced much on Mantoux or BCG reaction. There were 7 deaths in the study.

Conclusions

1. 125 children below the age of 10 years suffering from various forms of Tuberculosis constituted the study material.
2. There were 62 male and 63 female children.
3. Majority of them (52%) were between 2-5 years and malnourished (54.6%).
4. Constitutional symptoms were the main presenting features.
5. Maximum cases (48%) were suffering from intrathoracic form.
6. In malnourished and severe forms of Tuberculosis, BCG diagnostic was positive in 74.5% and 76.9% respectively.

TB/17. USEFULNESS OF LATEX AGGLUTINATION TEST IN THE DIAGNOSIS OF BACTERIAL MENINGITIS

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Etiological diagnosis of Bacterial Meningitis is essential for proper management. In India culture and gram stain often yield low positive values. Latex Agglutination Test (LAT) is highly sensitive, specific and easy to perform. The objective of the study was to find out the usefulness of LAT in the diagnosis of Bacterial Meningitis. 114 children aged 2 months to 12 years, presumed to have bacterial meningitis on the basis of following changes in CSF were recruited. a) WBCs: > 200 and differential PNL > 60%, b) Glucose: i) < 50% of simultaneous blood glucose, c) Protein level: > 100 mg/dl. CSF cell count, biochemical analysis, gram stain, culture and LAT were done. 81% were under 2 years of age. LAT was positive in 47 cases (41%). Organisms identified were H.influenza 28 (24.5%), S.pneumoniae 16 (14%), group B Streptococcus 2 and N.Meningitides 1. Culture was positive in 20 cases (17.5%), common organisms being S.pneumoniae 5, staphylococcus aureus 5 and Pseudomonas 6. Gram stain was positive in 13 cases, gram positive agents 7 and gram negative agents 6.

Among the organisms that could be identified by culture and latex, LAT gave high positivity (47 cases) compared to the poor yield of culture, only 5 cases. Hence LAT was able to identify

42 more cases (37%) than culture. Latex Agglutination Test is highly useful to get a specific diagnosis in a few minutes though it is expensive.

TB/18. IMMUNOLOGICAL PROFILE IN EXANTHEMATOUS FEVERS IN CHILDREN

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The Immune response was studied in 30 cases of viral exanthematous fevers and 65 normal children. A qualitative and quantitative study of Serum immunoglobulins was made in assessment of humoral immune response, besides the study of leucocytic response and Mantoux test as indicators of cell mediated immunity.

The serum immunoglobulins (IgM, IgG, and IgA) were studied on the day of admission and 30 days after appearance of rash. Only 18 cases could be followed up for the second serum sample. In the first sample, a rise in serum IgM levels was observed in 18 cases, IgG in 5 cases and IgA in 2 cases and a decrease in IgG and IgA in one case. In the second serum sample IgM continued to be high in 9 cases, IgG in 13 and IgA 7 cases with a comparative diminition in IgM levels in 7 cases. The comparative study of two sera samples indicates that the IgG levels rise over the period of next 30 days while the IgM levels show a downward trend during the same period. It can be inferred that a raised IgM level is suggestive of a recent infection.

The Mantoux test carried out with PPD of 5 TU in 0.1 ml on the day of admission in all the 30 cases was uniformly negative, indicating depressed cell mediated immunity in viral exanthematous fevers.

The leucocyte response studied on the day of admission showed a leucopenia in 3 cases with a normal leucocyte count in rest of the cases. A relative neutrophilia was seen in 8 cases, of whom 6 had secondary complications. An absolute lymphocyte count of < 2000/mm3 was seen in one case. The leucocyte count being within the normal range in as many as 27 cases, appears to be unreliable as a diagnostic criterion.

The humoral and cell mediated responses were essentially similar in both measles and chicken pox. There was no consistent pattern of change in serum immunoglobulins in relation to morbidity. None of the aforementioned laboratory parameters including the absolute lymphocyte count could be correlated with the clinical profile of the patients.

TB/19. UNUSUAL PRESENTATIONS AND COMPLICATIONS OF ENTERIC FEVER IN CHILDREN

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This study was conducted at Vanivilas Children Hospital, Bangalore Medical College, Bangalore. 100 cases of enteric fever in the age group of less than 12 years formed the material of this study. Laboratory criteria for the selection of cases was a positive widal test with a titre of O 1:160 or rising titre, or both O and/or A positive culture for salmonella organism.

Unusual presentations was seen in 20% of cases. 13 patients (13%) presented with features of acute infective hepatitis i.e., fever, nausea, vomiting, tender enlargement of liver and jaundice. 6 patients presented with altered sensorium with fever, out of which 2 cases had convulsions. One patient presented with an epileptiform seizure

but subsequently developed fever. The other 80% of cases presented with usual features, fever was the only presenting symptom in 50% of cases. Gastroenteritis-like presentation was seen in 15% of cases. Bronchitis-like presentation in 6%, upper respiratory tract infection like in 8% and one case presented with features of lobar pneumonia (1%).

On examination, fever, coated tongue, toxicity and splenomegaly was seen in 100%, 90%, 84% and 74% of cases respectively. 40% of cases had hepatomegaly out of which 13% of cases had hepatitis with abnormal liver function tests.

Blood count and urine examination were normal, except in one case of aplastic anaemia. Blood culture was positive in 30% of cases. Widal was positive in 88% of cases. Unusual complications encountered in this study were prehepatic coma and acute cerebellar ataxia in one case and acute chole-cystitis with cystic dilatation in another case. Other complications were paralytic ileus (2%) and myocarditis (1%).

All the cases recovered from illness after treatment except one case which was known case of aplastic anaemia, died, accounting for 1%, mortality in the study.

TB/20. ROLE OF PYRIDOXINE IN TETANUS

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Tetanus one of the few but frequently fatal bacterial infection. Pyridoxine (Vitamin B6) is a co-enzyme in the production of G.A.B.A. from glutamic acid, and it's administration to rats has been shown to increase production of G.A.B.A. This is a new therapeutic approach in which the therapy acts on disturbance of neuromuscular transmission caused by tetanus toxin. Based on this observation in present study attempt has been made to establish the role of pyridoxine as a therapeutic advance in management of tetanus in pediatric age group.

It has been observed that duration and frequency of spasms affected the mortality. Studies were conducted in which spasms were controlled earlier in pyridoxine group as compared to control group and difference were bound to be statistically significant.

In present study, 100 patient's of tetanus (including neonate) from Jan. 84 to May 1985 were treated. Patient were randomly divided in to control and pyridoxine group. the patient of pyridoxine were given pyridoxine hydrochloride 100 mg O.D.S. I/m. The patient of both group were kept in similar environment and were given optimal nursing care. Overall mortality was 31%. Mortality in control group was 38.78% and mortality in pyridoxine group was 23.53%.

It was observed that pyridoxine is effective in controlling convulsions earlier and reducing the mortality in both neonatal as well as non-neonatal cases of tetanus in comparison with the patient treated with only conventional line of treatment.

The administration by intramuscular route was found to be very simple and without any untoward reactions.

Treatment with I.P.P.R. and intrathecal A.T.S./ T.I.G., etc. are highly technical and skilled, although they improved the mortality over pyridoxine therapy but are not within the means of an average doctor practicing at a primary health centre. However, the administration of a pyridoxine dose not require any skill or costly equipment, and it reduces the mortality to a significant extent. Therefore, it could be the treatment of choice at peripheral levels.

TB/21. MANTOUX AS A DIAGNOSTIC TEST OF TUBERCULOSIS AT PRIMARY HEALTH CENTRE LEVEL

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The primary health centres are the pivot of health care in India, but these centres are devoid of the facilities of sophisticated investigations. The tuberculosis is a national health problem, and is very difficult to diagnose. This study was conducted at Burdwan Medical College and R. G. Kar Medical College in the Department of Pediatrics to diagnose tuberculosis by only Mantoux test. The Mantoux test is a cost-effective simple procedure. It can be performed by a health worker with minimal training. A total 240 cases were studied in the age group of 2-12 years. All the patients had history of contact with tuberculosis directly or indirectly or long continued fever or cough and cold more than 8 weeks. The battery of tests like haemogram, X'ray chest & Mantoux were done in all the patients. The sophisticated and high cost-tests were purposely avoided in this study to have a better understanding of the value of Mantoux test. The detailed clinical examination, anthropometrical measurements and nutritional status were assessed. The evaluation of Mantoux test was done according to Gupta's criteria. Out of 240 cases, tuberculosis was detected in 180 (75%) of which the X'ray was suggestive in 80 cases (33.3%). The combined X'ray and Mantoux positive cases were 115 (47.9%), Mantoux positive 97 cases (40.4%), Reconversion of Mantoux negative to Mantoux positive 20 cases (8.33%), clinical profile suggestive of tuberculosis but not investigation-wise 10 cases (4.1%) 59.2% cases were grade II-III Malnutrition but Mantoux test was distinctly positive. The majority of the patients belonged to 4-8 years age group i.e. 33%. Thus, 117 cases (61%) were diagnosed by Mantoux positive; 70.5% cases were diagnosed by Mantoux test and X'ray chest together. Thus, Mantoux test has got a real value in diagnosis of Tuberculosis at the primary health centres provided the pitfalls of its negativity are considered wisely.

TB/22. TYPES OF TUBERCULOSIS IN BCG VACCINATED CHILDREN IN A CLOSED POPULATION

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124 cases of tuberculosis were analyzed in the age group of 1-14 years. Out of these, 110 cases were BCG vaccinated within first two months of life and 14 cases did not receive the BCG vaccine.

In the BCG vaccinated group, 51 cases (46.4%) showed a positive tuberculin reaction, and 42 cases (38.2%) showed positive tuberculin reaction with radiological evidence of tuberculosis. 9 cases (8.2%) were tuberculin negative but had radiological evidence of tuberculosis. 5 cases (4.5%) had tuberculoma 2 cases (1.8%) had meningitis and 2 cases (1.8%) had tubercular lymphadenitis.

In the tuberculin positive group, 58.8% were under 5 years. In tuberculin positive and positive x-ray chest group, 57.1% were under 5 years.

The radiological evidence in this group is as follows:

Hilar lymphadenopathy was noted in 28.6% cases, progressive primary complex of varying degree in 54.8% cases. Pleural effusion was noted in 9.5% cases. Only 2.7% of

the BCG vaccinated group had disseminated tuberculosis.

In the non BCG vaccinated group, 4 out of 14 cases had shown disseminated tuberculosis i.e. 28.6% cases.

These findings confirm the earlier observations that BCG vaccination offers protection against disseminated tuberculosis and should be routinely recommended to all infants.

TB/23. COMPARATIVE STUDY OF ENTERIC FEVER DUE TO CHLORAMPHENICOL - SENSITIVE AND RESISTANT STRAINS OF SALMONELLA TYPHI

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A total of 126 cases of Enteric Fever with positive blood culture were analyzed. 91 cases belong to sensitive strains group and 35 cases to resistant group. There has been an abrupt rise in cases due to resistant strains from January 1990. 70% of the cases belong to age group above 5 years in both groups. Fever with rigors (31.4% cases) and hyper pyrexia (14.3% cases) were often seen in the resistant group. Increased incidence of splenomegaly (91% of the cases in contrast to 50.8% cases in sensitive group) and moderate liver enlargement with enzyme rise (20% of the cases) was noted in disease due to resistant strain.

The striking difference in the two groups was that the total duration of the fever and response to drug therapy was markedly prolonged in resistant group. In 28.6% of the cases in resistant group, fever persisted beyond three weeks, nil in the other group. Only 25.7% of the cases in the resistant group responded within one week compared to 85.7% cases in the sensitive group. Multiple drug therapy was essential in resistant group, sometimes more than two drugs were used (Cephalosporins, Aminoglycosides and Ciprofloxacin). Ciprofloxacin was used in least number of patients because of its potential toxicity. Multiple drug therapy required for treating the resistant group has escalated the cost of therapy 3-4 times compared to the sensitive group. There was no significant difference in mortality in either group.

TB/24. CLINICAL PROFILE OF FALCIPARUM MALARIA IN AN INDUSTRIAL HOSPITAL

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A retrospective study of Falciparum Malaria in Indian Oil Corporation Ltd. (Assam Oil Division) Hospital, Digboi from January, 1975 to July, 1990. Total Malaria cases were 1374. Children cases 314 (22.85%). The age ranged from 15 days to 12 years. In children P. falciparum 187 (59.55%), P.vivax 106 (33.75%), Mixed 19 (6.05%) & P. Malariae 2 (0.6%). Male : Female ratio was 3:1. Maximum number of cases between 7-12 years (57.75%). They were either nutritionally normal (51.33%) or had PEM grade I to III (48.66%). Majority (74.86%) belonged to poor socio-economic status.

Majority presented with the classical symptoms of fever (89.83%), Headache (81.28%) & Vomiting (43.3%). Others presented with diarrhoea (16.04%), Jaundice (14.97%), Convulsion (8.02%) Altered sensorium (9.62%), behavior changes (3.2%) & Aphasia (1.06%), 11.22% cases presented with Acute Bacillary Dysentery and 4.27% with Typhoid fever. Majority had hepatomegaly (84.49% & Splenomegaly (72.72%) Anaemia was present in 38.50% cases. Broncho

pneumonia (3.2%) cases, neck rigidity in 4.8% cases, 5.34% had coma with increased tendon Jerks in the lower limbs with plantar bilaterally extensor. Cerebellar signs in one case. Extra pyramidal syndrome of tremor, rigidity and incoordination in one case. Complications seen were acute renal failure (1.06%) shock (circulatory collapse (1.60%), G.I. bleeding (1.06%), Sever anaemia with CCF (2.67%), Acute Pulmonary edema (0.53%).

TB/25. PAEDIATRIC DENGUE HAEMORRHAGIC FEVER IS IT COMMON IN BOMBAY?

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Resistant enteric fever (Dombivli fever) has assumed epidemic proportions in Bombay with a heavy toll in the paediatric age group. Inconclusive laboratory proof has added to the problem of management while treating these cases we came across with severe haematemesis, malaria, pleural effusion and ascites which are uncommon with enteric fever. This led us to the suspicion of the possibility of Dengue fever. Having lost two such cases, we earnestly investigated the next case. To our surprise, the investigations revealed recent infection with Dengue virus in this case. Shortly, within the next few weeks, eight more cases with identical clinical picture were admitted. In all 10 children, the age ranged from 9 months to 10 years; 3 were female and 7 males.

All these children were admitted with history of fever, vomiting, abdominal pain, haematemesis, melaena and altered sensorium. Four out of ten children were in shock on admission. Examination findings were abdominal distension (50%), abdominal tenderness (40%), mild hepatomegaly (100%), mild splenomegaly (30%), Ascites (40%), paralytic ileus (20%) and mild right sided pleural effusion (40%).

Investigations revealed thrombocytopenia, raised serum transaminases in seven patients, elevated serum bilirubin in two patients, abnormal coagulation profile (increased clotting time, elevated PT, PTTK) in 5 patients, whereas blood urea nitrogen, serum creatinine, serum electrolytes, cerebrospinal fluid, blood widal and clot culture were negative. Radiography and ultrasonography demonstrated right sided pleural effusion and ascites in eight patients. Gastroscopy done in one patient for persisted fresh haematemesis showed erosive gastritis. All the patients were managed with supportive line of treatment and higher antibiotics and discharged without any sequelae.

Report of viral studies of the remaining patients are awaited. Uncommon incidence of dengue fever in Bombay is highlighted.

HAEMATO-ONCOLOGY

*HO/01. UNUSUAL MANIFESTATIONS IN SICKLE CELL DISEASE

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Sickle anemia is a common hemoglobinopathy prevalent amongst various tribal communities in India. It is inherited as an autosomal recessive trait, and hence if both parents have a trait, they could have children with either homozygous or heterozygous state. The spectrum of presentation ranges from a mild clinical course to severe crisis of various types. There are certain known complications occurring in these children more so in the homozygous patients. However, we, in our study, encountered 5 patients with unusual presentations. 2 patients were brought with CNS manifestations, one of them, an 11 year old girl was brought with left sided hemiparesis. All other investigations were normal except HbS which was 28.4% suggesting a vaso-occlusive crisis in a sickle trait. A patient, a 6 years old girl was brought convulsing to the hospital. CT Scan was suggestive of intracranial hemorrhage. HbS was 84% diagnosing sickle homozygous state. An 8 years old girl was brought with renal failure, hypertension, convulsion and anuria. The patient was diagnosed as hypertensive encephalopathy, and cause of renal disorder was being investigated and was found to have sickle cell anemia with a HbS of 73%. A 6 years old boy was brought with fever, pain in all 4 limbs, swelling of small joints of hands & feet had hepatosplenomegaly. The patient was investigated and was diagnosed as multiple osteomyelitis due to klebsiella pneumoniae. HbS was 85%. A 5 years old boy was brought with progressive pallor, pain in abdomen and epistaxis. Examination revealed splenohepatomegaly. Investigations revealed a sickle cell trait (HbS 35%) with spherocytosis with autoimmune hemolytic anemia (warm and cold antibodies were detected on coomb's testing). The first case with hemiparesis, though a known manifestation of sickle homozygous is rarely reported in literature, in a sickle cell trait as in our patient. Intracranial hemorrhage, hypertensive encephalopathy due to sickle nephropathy and klebsiella osteomyelitis is uncommon in patients with homozygous sickle. 17% of sickle trait patients are known to have autoantibodies causing hemolytic anemia. The last case described above not only had this association but also had a rare co-inheritance of spherocytosis with sickle cell trait.

*HO/02. PATTERN OF INFECTIONS IN CHILDREN WITH ACUTE LYMPHOCYTIC LEUKEMIA

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Sixty eight febrile episodes in 53 children between 5 months to 11 years with acute lymphocytic leukemia were investigated to determine the pattern of infections in the children's wards of the All India Institute of Medical Sciences. Forty one were boys and twelve were girls. These children presented with pneumonia (18), enteritis (18), upper respiratory infections (11), urinary tract infection (7), abscesses (6), meningitis (2), suppurative otitis media (2), and peritonitis (1). Bacteremia was present in 24 children. Microbial organisms were isolated in 33 (48.5%) episodes. Total of 59 microbes were isolated in these children. Gram negative isolates included E.Coli (11), Kleb pneumoniae (6), Pseudomonas and Acinetobacter in 5 cases each, Enterobacter and Salmonella typhi in 3 cases each. Common gram positive organisms included were Staph aureus (9), Coagulase negative staph (6) and alpha hemolytic Streptococci

(2). Clostridium was isolated in 3 cases. Higher mortality was seen if the absolute neutrophil count was less than 1500/ul. Absolute neutrophil count at the time of death was less than 500 in 8 of 10 cases. Ten children died in spite of adequate antibiotics and supportive therapy. In 9 of them underlying infection was responsible for mortality.

*HO/03. CNS COMPLICATIONS DURING THERAPY OF ACUTE LYMPHOBLASTIC LEUKEMIA

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Newer chemotherapy protocols have achieved 60-65% long term survival in therapy of acute lymphoblastic leukemia. To improve the poor results of our previous protocols we started a new aggressive combination chemotherapy protocol since June 1986. Here we report the central nervous system complications in 31/336 patients on this protocol. Majority of the patients were males (67%), median age was 6 years range (1-12 years) seizure was the commonest symptom (29/31), and it was focal in 11 patients. Focal neurological signs were present in 9 patients; 5 patient showed a picture of meningitis. Coagulation profile done in 21/31 and was normal in all except in 2 patients. Computerized tomography of the brain was performed in 20 patients, of which 4 did not show any abnormality. Focal leukoencephalopathy in 1. EEG revealed an epileptic focus in 3/6 patients. 19 patients recovered completely. Persistent neurological deficit was seen in two patients. 10 patients died. Infection (4) was the commonest cause of death followed by infarct (2), hemorrhage (1), multifocal leukoencephalopathy (1) and undetermined cause (2). L-asparaginase seems to play an important role in the etiopathogenesis of non-infectious CNS complications during the therapy of acute lymphoblastic leukemia.

*HO/04. A PROSPECTIVE STUDY AFTER SPLENECTOMY IN BETA THALASSEMIA

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Twelve cases of B-thalassemia diagnosed from clinical profile and electrophoretic pattern of Haemoglobin. In these cases splenectomy was done for the following indication:

1. Mechanical discomfort done to huge splenomegaly - 3 cases
2. Repeated blood transfusions almost every monthly - 3 cases
3. Failure to raise the Haemoglobin more than 3 gm. after 4 bottles of transfusion within few days - 1 case.

All the cases were admitted 7-10 days prior to splenectomy. Children were thoroughly examined and relevant investigations were done prior operation. The children were 3-12 years aged. All the cases were followed up for 1-6 years after the splenectomy, 6 cases had received the pneumococcal vaccine before operation, and 4 cases completed the course of Hepatitis B Vaccine was given. The children were put on prophylaxis penicillin irrespective of vaccination. During follow up, the detailed growth pattern, physical activity and number of occurrence of illness and sexual development (specially those children who were more than 12 years) was carried out. It is interesting to note that the physical growth, sexual development and activity was almost normal in comparison to healthy children. The children needed blood transfusions at 3-6 months interval. All of them maintained the Haemoglobin level more than 8 gm%. One child died due to hepatic coma after 6 months of splenectomy. The histopathology of liver showed normal architecture with kupffer will hyperactivity and

infiltration of lympho-mononuclear cell in the partial tracts. Iron stains revealed increased deposit of iron within the Kupffer cell. There is no evidence of cirrhosis. Spleen showed congestion with hyperplasia of R.C. cell with foci of extramedullary hemopoiesis. It has been reported the occurrence of chronic hepatitis, persistent hepatitis and cirrhosis of liver due to synergistic effect of transmitted viral infection and high iron level in 7-17% cases, where splenectomy was done at a late stage. Thus, in conclusion it can be said that early splenectomy & shorter frequency of transfusion, promote normal physical and sexual growth, helps in maintaining normal life and prevents occurrence of unwanted liver pathology. Hepatitis B vaccination is mandatory before splenectomy.

*HO/05. CRUDE HEMATOLOGICAL PREDICTORS FOR RESPONSE IN ALL

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Management of ALL is increasingly becoming refined with the availability of sophisticated investigations like cell markers. It is usually possible to predict the outcome in a given case at the time of initial presentation by cell marker and cytogenetic studies. However, their availability remains a distant dream even for majority of medical colleges in our country. Is it possible to predict the outcome in ALL patients on the basis of common hematological investigations?

We analyzed 43 patients, who presented to us with the diagnosis of ALL over a period of 10 years. Since ultimate prognosis depends, to a large extent, on successful induction of remission, this criteria was used to divide these patients into 2 groups. The remission was induced by injection vincristine and prednisolone, and a repeat bone marrow was done after 6 weeks. Group A consisted of 30 patients, who achieved remission and Group B of 13 patients, where induction failed.

It was found that factors associated with failure of induction included - hemoglobin more than 7 g/dl, TLC more than 50,000/cumm, platelets less than 50,000/cumm and peripheral blasts more than 90% (p 0.05). Age, sex and blasts in bone marrow did not show any significant correlation with success or failure of induction.

It is concluded that initial hematological profile can be taken as a guide in deciding the aggressiveness of induction therapy, if any of the unfavourable factors mentioned above are present.

*HO/06. INFANTILE NEUROBLASTOMA: A TEN YEAR TMH EXPERIENCE

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The results of 19 children under 1 year of age treated at the Tata Memorial Hospital between 1981-1990 were analyzed.

Of these children 4 were less than 6 months old, the remaining being 6 months - 12 months with a median follow up of 36.6 months. All patients with stage II and IV-s are alive and disease free, 3/5 stage III patients are disease free (75%) and 2/8 (25%) with stage IV are alive. Age of the patient at diagnosis has proven to be an independent prognostic factor. The survival of infants with stage II and IV-s is significantly better than for children with stage III and IV disease.

HO/07. A STUDY OF HEMOSTATIC FACTORS IN CORD BLOOD

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The study was conducted to assess the hemostatic parameters in the cord blood of normal newborns. Eighty newborns, term and preterm, were included in the study and results compared with adult controls.

The tests included prothrombin time, partial thromboplastin time, thrombin time and platelet count. These comprehensively test the functional integrity of the entire coagulation mechanism. The work thus conducted provided the following conclusion:

1. Coagulation mechanism at birth is not well developed as shown by abnormal prothrombin time, partial thromboplastin time, and thrombin time.

2. Term newborn have a relatively milder coagulation deficiency at birth.

3. Preterm newborns have a more definite deficiency which become more severe with increasing prematurity.

4. The placenta acts as a barrier to the transfer of coagulation factors from the mother to the neonate, and this barrier is largely complete.

5. The range of values for the hemostatic parameter in newborns is rather wide and individual newborns' manifest varying results.

6. The platelet count in term and preterm newborns is the normal adult range.

HO/08. SERUM AND TISSUE LEVELS OF SOME TRACE AND BULK ELEMENTS IN PAEDIATRIC LYMPHOMAS

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The serum levels of copper, zinc and magnesium were measured in 30 children between 5-15 years of age, suffering from histologically proven Hodgkin's or Non-hodgkin's lymphoma and 30 healthy controls. There were 12 patients of non-Hodgkin's and 18 patients of Hodgkin's lymphoma. Patients were staged according to the Ann Arbor staging and the distribution was as follows: State I (0), Stage II (7), Stage III (13) and Stage IV (10). Lymph-node biopsy was performed in all cases, and the tissue obtained was dryashed and dissolved in concentrated hydrochloric acid for estimation of tissue trace element levels. The control tissue samples were obtained from lymph node biopsies done for benign conditions. The analysis were done by Atomic Absorption Spectrophotometry.

Serum copper levels (SCL) were increased significantly in all stages of lymphomas as compared to controls ($p<0.001$). The increase correlated with the advancing stage of the disease, the maximum increase being in Stage IV lymphoma ($p<0.001$). The serum zinc levels (SZL) were lowered in all patients but the fall was statistically significant only in Stage III & IV patients ($p<0.001$). The fall in serum magnesium levels (SML) in advanced lymphoma cases was not statistically significant ($p<0.05$). Serial estimation of these elements in 16 of 22 patients showed a statistically significant fall in SCL and rise in SZL after treatment. 6 patients with residual/recurrent disease showed significantly elevated SCL and depressed SZL. There was

no significant alteration ($p>0.05$) in the levels of copper, zinc and magnesium in lymphomatous tissue.

It is concluded that serum copper and zinc levels are useful, easily assessable biological tumour markers in these patients.

HO/09. LIPID PROFILE IN THALASSEMIC CHILDREN

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Repeated blood transfusion in thalassemic children leads to iron overload which causes injury to the heart, liver, pancreas, adrenal and pituitary gland. Since the liver is actively involved in the metabolism of lipids, any injury to the hepatocytes will cause fluctuations in blood lipid levels. This study was conducted to establish the levels of various lipid fractions which could reflect the hepatic damage. A total of 63 children suffering from beta thalassemia major, and 38 age matched normal children were included. Fasting blood samples were analyzed for various lipid parameters such as total lipids, total cholesterol, free cholesterol, triglycerides, VLDL-triglycerides, total phospholipids, free fatty acids, LDL- cholesterol, HDL-cholesterol and its fractions HDL2 and HDL3 cholesterol and VLDL-cholesterol lipoprotein electrophoresis was also performed. Out of these, triglycerides and VLDL cholesterol showed a significant increase in their levels in thalassemic children as compared to normal. VLDL triglycerides and free fatty acids were increased marginally but were not significant. The remaining fractions of lipids exhibited a significant reduction in their levels in thalassemic children. Alpha and beta lipoprotein fractions were reduced significantly whereas pre-beta lipoprotein was increased. Thus in conclusion, thalassemic children present hypolipidemia and moderate hypertriglyceridemia due to hepatic damage resulting from iron overload. This may provide a useful biochemical marker to clinicians for monitoring the hepatic damage and may replace liver biopsy to a certain extent.

HO/10. PREVALENCE OF HIV SEROPOSITIVITY IN MULTI-TRANSFUSED THALASSEMIC CHILDREN

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Human immunodeficiency virus (HIV) infection has emerged as the most dreaded transfusion related complication. There are very few published reports regarding the prevalence of HIV infection in multi-transfused thalassemics, and none from our country which is a part of the "thalassemia-belt".

Fifty children of beta-thalassemia major on a regular transfusion programme, having received blood transfusions for a variable period of 1-12 years, constituted the study group. Altogether, they had been transfused 3825 units of blood with a mean number of 76.5 transfusions (range 8-235). Eighty six per cent had received more than 20 transfusions, and 66% had received more than 50 transfusions. All these transfusions had been given before the institution of mandatory HIV screening by our hospital blood bank, which is entirely voluntary donor based. The serum samples of these patients were analyzed for the prevalence of HIV antibody by the micro-ELISA method using Wellcozyme kits. All the 50 samples were seronegative for HIV antibody. The results of our study are in

striking contrast to other studies where prevalence of HIV seropositivity varied from 6-38.5%. This is a reflection of nil or very low prevalence of HIV infection in voluntary blood donors in the region in spite of the fact that eight full blown cases of AIDS have been documented in Punjabis. Although we cannot be complacent, continued surveillance of donors would obviate the need for testing in such multi-transfused children

HO/11. RED CELL DEFORMABILITY AND FILTERABILITY IN THALASSEMIA

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The deformability of a mature RBC is due to three properties namely, cell shape, flexibility of the membrane, and the fluidity of hemoglobin. In the bone marrow narrow, slits between the adventitial cells connect the bone marrow sinuses with the blood circulation and the enucleated reticulocytes can pass through these slits only after they have become sufficiently flexible during maturation. Once in the circulation the deformability of the RBCs decreases with the aging process. The deformability of the RBC is an essential factor in the microcirculation and has been studied by various methods. Altered rheological properties have been observed in various red cell disorders like sickle cell anemia, hereditary spherocytosis, elliptocytosis, and thalassemia (both homozygous and heterozygous). In homozygous beta thalassemia,a altered rheological properties of the erythrocytes are due to the pathological cell shape, decreased fluidity of the intracellular hemoglobin and presence of inclusion bodies (more so in splenectomized children). Seventeen patients sufferingfrom homozygous, beta thalassemia, 5 of whom were splenectomized were studied. Following parameters were determined. 1) Red cell filtrability with a 5 micron membrane, 2) red cell rigidity by viscometric method, 3) plasma viscosity at shear rate of 51.2/sec., 4) whole blood viscosity at shear rate 51.2/sec., 5) hematocrit, 6) ESR. The red cell rigidity was increased in the patients studied and was on an average 4.202 with the control of 2.82 +(-) 0.688. The red cell filterability was also increased and was an average 3.01 with the control of 1.5 to 2.5. Plasma viscosity was increased whereas whole blood viscosity was decreased. The mean whole blood viscosity in the thalassemic patients was 2.68 was compared to normal controls where it was 4.2 +(-) 0.93. This was a statistically significant difference. This data also revealed that splenectomized children had worse hemorrheologic characteristics, but survival time of erythrocytes increases because the rigid cells are no longer, sequestrated at the same rate by the rest of reticuloendothelial system. Pentoxyphylline administration in non-splenectomized thalassemics has been shown to improve the erythrocyte filterability, blood viscosity and erythrocyte aggregation. However this has not been done by us at present.

HO/12. FANCONI'S ANEMIA - 4 CASES

Mamta Manglani, Shakuntala Rao, Shilpi Chabra, Meenakshi Mehta, M.R. Lokeshwar

Fanconi's anemia is one of the constitutional aplastic anemias, which not very commonly encountered. Two thirds of the affected children have associated congenital anomalies. We present 4 cases of Fanconi's anemia seen at the hematology clinic of the department of pediatrics, L.T.M.G. Hospital, Sion, Bombay. These patients ranged in age from 4-1/2 to 15 years at the time of presentation, 3 were male children and 1 was a female. All of them presented with progressive anemia and two of them had bleeding tendencies. Consanguinity was present in

only one of these patients with none of them having a family history of similar disorder. Microcephaly was present in all four patients. The average height was below the 5th percentile in three of them, while one of them who presented at 4-1/2 years, yet had normal height. Cutaneous hyperpigmentation was present in three of them, renal anomalies in two, skeletal features in one in the form of supernumary digit attached to the right thumb. Hypogonadism was observed in two of the three male children. None of our patients had associated cardiac defects. Pancytopenia of varying degrees was present at the time of first evaluation, with a corrected reticulocyte count of less than 1%, and MCV ranging from 102-129 fl. Bone marrow and bone biopsy revealed hypocellularity, confirming the diagnosis. Foetal hemoglobin ranged from 3.22 - 8.4% Chromosomal studies of blood lymphocytes were done in three of them. In two, there were apparent chromosomal aberrations. All these patients receive blood transfusions as and when required along with androgenic steroids.

HO/13. SPLENECTOMY IN HEMATOLOGICAL DISORDERS

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Splenectomy has been mentioned in ancient literature more than 2000 years ago. However, therapeutic splenectomy is being performed only since the mid 19th century. In more recent years, it has been a modality of treatment in various hematological conditions. We retrospectively analyzed our data on all the splenectomized patients to study the indications, preoperative and post operative status and morbidity, if any, on follow up. Twenty patients with various hematological disorders were splenectomized over a period of 2-1/2 years. The ages ranged from 1-1/2 years to 13 years, and male to female ratio was 3:2. The diagnosis in these patients were as follows - Thalassemia Major 7, Kalaazar - 3, Idiopathic thrombocytopenic purpura - 3, E-thalassemia - 1, Spherocytosis - 3, Thalassemia intermedia - 2, and Benign histiocytosis - 1. Splenic size ranged from 5 cms - 18 cms in all the patients except in those with idiopathic thrombocytopenic purpura, out of these one had a 2 cms palpable spleen. Indications for splenectomy differed depending on the etiology, hypersplenism being a criterion in 14 patients which included hemoglobinopathies, kalaazar, and benign histiocytosis. However, it is interesting to note that all the 3 patients with kalaazar were resistant to medical therapy and had associated hypersplenism. In 3 patients, chronic idiopathic thrombocytopenic purpura, splenectomy was performed since the patient had not responded to the other alternative therapies available. In 3 cases of spherocytosis, splenectomy was the only modality of treatment. In 4 patients, spleniculi were seen intraoperatively. All the patients had an uneventful post operative recovery except for one who devel oped pneumonitis which responded to antibiotics. Pneumovax could not be arranged for any of these patients due to financial constraints, however penidura prophylaxis was given. All the 10 patients of hemoglobinopathies had a significant reduction in transfusion requirement following splenectomy. Of the 3 patients of ITP, there was 66% response, while amongst the 3 kalaazar patients, initial response was seen in all however one patient had a relapse after 6 months of splenectomy. Patients with spherocytosis had 100% response. The child having benign histiocytosis also did very well and was apparently cured. Overwhelming post splenectomy infection was observed in 4 of these 20 patients (20%). 2 patients were lost to follow up which ranged from 6 months to 2-1/2 years. One child died of an unexplained cause at home

after 1-1/2 years of splenectomy. Thus in conclusion, in carefully selected patients, therapeutic splenectomy can have desirable effects provided proper care is offered in the event of slightest infection post operatively. Also, whenever possible vaccination against pneumococci and H influenza must be emphasized.

HO/14. FULMINANT COURSE OF ACUTE VIRAL HEPATITIS IN PRESENCE OF GLUCOSE-6-PHOSPHATE DEHYDROGENASE DEFICIENCY

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Eleven boys with glucose-6-phosphate dehydrogenase deficiency (G-6-PD) between the ages 7 to 11 years (Mean 8.9 years) were admitted to the children's ward of All India Institute of Medical Sciences with hepatitis. These boys presented with moderate to high grade fever of 3 to 9 days(mean 5.9 days) along with sudden and severe jaundice in all, high colored urine in 8, vomiting and altered sensorium in 4 and oliguria in 3 children. Five of these children had received chloroquine for a possible diagnosis of Malaria, while one child received cotrimoxazole prior to admission. Hepatomegaly of 3 to 5 cm. was present in all while the spleen tip was palpable in one case only. These children had severe anemia with Hemoglobin ranging between 3.0 to 7.9 (mean 5.4) gm/dl, with leucocytosis in 9 (>10,000/1) and neutrophilia (neutrophils >70%) in all 11 children. Reticulocyte count varied between 7 to 14% (mean (1.6%). Plasma Hemoglobin was raised inall. Bilirubin levels were elevated in all children, the total bilirubin levels varied between 60 to 1265 (mean 619.6) umol/L, while direct bilirubin level varied between 32.5 to 838 (mean 338.5) umol/L. Serum transaminases were raised in all children, the SGOT varied from 180 to 3903 (mean 883.9) IU/L, and the SGPT from 180 to 2910 (mean 936.9) IU/L. Blood Urea was elevated in 7 cases, and in them it varied between 100 to 210 (mean 150) mg/dl. Antiglobulin (Coomb's) test was negative in all. The Hepatitis B surface antigen was positive in one case only. All these children were managed with supportive care and forced diuresis along with management of hepatic failure and renal failure in 4 cases each. All except one child recovered. These children had 6-G-PD deficiency when tested 2 to 4 months after complete recovery.

HO/15. STUDY OF HISTIOCYTOSIS IN CHILDREN

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30 patients of Histocytosis X were seen over a period of 10 years. 19 were males and 11 were females. 11 patients were below 2 years, 15 between 2-4 years and 4 were more than 4 years of age. The presenting manifestation were fever in 20 (66%) and bony swelling in 10 (33%) other associated symptoms were ear discharge in 18 (60%), Jaundice in 3 (10%) and polyuria in 5 (17%). Physical examination revealed anemia in 20 (66%), Hepatosplenomegaly in 18 (60%), generalized lymphadenopathy in 10 (33%). Multiple soft swelling over scalp were present in 3 (10%), and Bony swelling in 6 (20%). Clinical scoring system revealed that majority of children were having multi-systemic involvement at diagnosis. Diagnosis were established by skin/lymph node/bone marrow / liver biopsies. Five patients were treated with cyclophosphamide and prednisolone, 6 were treated with 6 MP and prednisolone, 10 were treated with Vinblastine and prednisolone, 10 were treated with Vinblastine and prednisolone. Long term survivals were significantly longer in children treated with prednisolone and vinblastine combination.

HO/16. L-ASPARAGINASE INDUCED HYPERGLYCEMIA IN LEUKEMIC PATIENTS

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L-Asparaginase has been incorporated in induction therapies of acute lymphoblastic leukemia since the observation that the enzyme was an active agent in lymphoma. Hyperglycemia is a well recognized side effect of therapy with L-asparaginase which if not detected early may lead to fatal diabetic ketoacidosis. 9 patients developed hyperglycemia following induction with a treatment protocol incorporating vincristine, daunomycin, L- asparaginase and prednisolone. There were 5 females and 4 males. Age range was 4-12 years. Hyperglycemia was observed after a minimum of two doses to a maximum of 10 doses (median 5). Blood sugar levels ranged from 173 mg% to 857 mg% (mean 485 mg%). Average duration to control diabetes with insulin was 12 days (range 4-25 days). Ketosis was corrected in all patients within twenty four hours. 5 patients had associated infection. In 1 patient the E-coli preparation of L-asparaginase was replaced by Erwinia asparaginase. Recrudescence of hyperglycemia was seen in 1 patient only. One patient died with diabetic ketoacidosis and septicemia. Hypoinsulinemias resulting from inhibition of insulin biosynthesis seems to be the widely accept mechanism for L-asparaginase induced hyperglycemia.

HO/17. ASCORBIC ACID ENHANCEMENT OF DESFERRIOXAMINE INDUCED URINARY IRON EXCRETION IN THALASSEMIA

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In thalassemia major, excessive breakdown of cells, ineffective erythropoiesis, increased gastrointestinal absorption of iron and frequent blood transfusions give rise to a massive iron burden which ultimately produces visceral hemosiderosis a major cause of severe morbidity and mortality in this disease.

Removal of iron from the body by means of iron chelating agents like desferrioxamine (DFX) is seen to increase the survival. This removal of iron is found to be increased by the addition of ascorbic acid (Vit.C) in ascorbate deficient children.

Present study was carried out on 30 diagnosed cases of Thalassemia major. Their 24 hours baseline urinary iron excretion (UIE), DFX induced UIE and DFX induced UIE after administration of 100 mgm. and 200 mgm. of oral vitamin C were estimated.

The baseline 24 hours UIE was found to be high in all our patients (mean value 1.49 mgm./day). There was a significant association between baseline UIE and number of transfusions ($p<0.01$), age of the patient ($p<0.01$) and serum ferritin levels ($p<0.01$). We also found a significant association between DFX induced UIE with age and number of transfusions. DFX induced UIE showed a significant association with serum ferritin levels.

Administration of 100 mgm of oral vitamin C with DFX infusion was seen to raise the mean UIE to 19.23 mgm/day and 30.95 mgm/day respectively. However, addition to vitamin C did not influence the correlation of DFX induced UIE with age of patient, number of transfusions received and serum ferritin levels.

HO/18. HEMOGLOBINOPATHIES DURING INFANCY IN WESTERN ORISSA

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Hemoglobinopathies, particularly sickle-cell anemia is regarded as a major cause of morbidity and mortality in the children of Western Orissa. Other hemoglobinopathies encountered may at times mimic sickle-cell anemia. Hence an attempt has been made to study the prevalence and distribution of various hemoglobinopathies during infancy in this part of Western Orissa.

Out of the total 500 infants screened for anemia, 32(6.4%) infants were found to have different hemoglobinopathies. Amongst them 3 infants were below 3 months of age, 9 were between 3 to 6 months and rest 20 were between 6 to 12 months of age. On electrophoresis, the different hemoglobinopathies encountered were sickle-cell anemia (SS), sickle-cell trait (AS) and sickle thalassemia (SF) in 37.5%, 18.75% and 12.5% cases respectively. Other abnormal hemoglobinopathies were thalassemia major (FF) in 21.87% cases and thalassemia minor (AS) in 9.38% cases.

The various clinical findings noted were anemia, hepatomegaly, splenomegaly, fever and jaundice in 100%, 93.75%, 87.5%, 62.5% and 46.87% cases respectively. Other features encountered were bronchopneumonia, bleeding episodes and hand-foot syndromes in 21.87%, 21.87% and 15.06% cases respectively. Different hematological indices included were marked anemia, reticulocytosis, raised fetal hemoglobin and target cells in the peripheral smear. Cases with associated infections and crisis respond nicely to appropriate antibiotic therapy.

HO/19. THALASSEMIA AWARENESS OF FAMILY PHYSICIANS VERSUS THAT OF PARENTS OF THALASSEMIA PATIENTS

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Delhi has a large number of cases of Beta Thalassemia major partly due to migrated population from West Pakistan. For blood transfusions and major problems, they attend hospital, while day to day problems are managed by the family physicians.

An opportunity to study the disease awareness amongst family physicians was availed of at a refresher course organized by our hospital. A questionnaire containing 15 questions regarding mainly the management of Thalassemia was given to them. The same questionnaire without modification was given to the parents of Thalassemia patients attending Thalassemia clinic and transfusion centre at our hospital. Answers were received from 29 doctors and 31 parents and analyzed.

It was found that questions regarding the disease management were better answered by the parents than the doctors while knowledge regarding the etiopathogenesis was more among doctors. For example 93.5% of parents knew that the haemoglobin should be maintained above 10 gm/dl in contrast to 24.1% of doctors. Another question regarding chelation of iron was correctly answered by 77.4% of parents while only 65.5% of doctors were correct. Seventy one per cent of the parents knew about the dietary advice while only 27.5% of the doctors were aware of that. Knowledge regarding inheritance of the disease was more among doctors (89.6%) as compared to parents (48%).

To our surprise, we found that 41.3% of doctors felt that Thalassemics are mentally retarded while only 6.4% of parents had this wrong impression.

We conclude that there is need to update the knowledge of family physician regarding the management of Thalassemia.

HO/20. ANAEMIA AND SUB-MAXIMAL WORK CAPACITY

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A total of 3377 children of 0-11 years age, from two population groups (Rural = 1920, urban = 1457) were taken as subjects for the study. After investigations and treatment, non-responders were excluded. Blood lactate levels, an estimate of anaerobic respiration in the body, were estimated before and after a standard exercise test at three stages i.e. before treatment, after treatment of two months duration and four months after stopping treatment.

The basal mean blood lactate levels of anaemic children before treatment were high and the mean rise in the blood lactate levels after exercise was also higher as compared to the levels after two months of treatment.

Revaluation, four months after stopping treatment, showed a significant rise in the basal blood lactate levels, and the mean rise of blood lactate levels after exercise was also higher, but these levels did not come up to the pretreatment levels.

HO/21. RHABDOMYOSARCOMA IN CHILDREN

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Rhabdomyosarcoma is a common soft tissue sarcoma in pediatric age group. A total of 17 children with rhabdomyosarcoma proven histopathologically were admitted in the last five years. They constituted 0.02% of total pediatric admissions and 7.6% of malignancies in children. Fourteen were males and 3 were females. Age wise grouping showed 9 children to be above 5 years, 7 between 1-5 years and only one below 1 year. Sites involved were head and neck (6 cases), trunk and extremities (6 cases), genito-urinary (3 cases) and multiple sites (2 cases). Duration of presentation was less than 1 month in 8 cases, 1-2 months in 5 cases, 2-3 months in 3 cases and 8 months in one case. Presenting features were swelling of involved site, weakness and retention of urine in genito-urinary cases. Local lymphadenopathy was seen in three cases with involvement in head and neck region. None of the cases had any significant pallor. Two cases left against medical advice, and the remaining fifteen children showed good response to the induction chemotherapy.

GENETICS

*GEN/01. CYTOGENETIC STUDIES IN MENTAL RETARDATION AND MULTIPLE CONGENITAL ANOMALIES

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The present study describes the cytogenetic studies carried out in a total of 342 cases referred to the Genetic Clinic. Cases with mental retardation and multiple congenital anomalies were included in the study. Syndromes known to be associated with a genetic marker were also included but conditions due to single gene disorders like spina bifida, cleft palate were not taken into the study sample.

Of the total 342 cases, chromosomal abnormalities were detected in 166 cases (48.6%). The commonest anomaly being Down's Syndrome; 125 (36.2%) cases of trisomy 21 were recorded. Mosaicism 14 (4.1%) and 7 (2.0%) translocations (D/G, G/G/) formed the remaining abnormalities in Down's Syndrome.

Fragile site on the X chromosome is now being recognized as an important cause of MR in males. In this study fragile X was observed in a eleven year old boy. Similarly the role of autosomal fragile sites in the etiology of MR is also being studied. Two cases with fragile sites on chromosomes 6 and 16 were recorded.

Various structural anomalies of the chromosomes are responsible for multiple congenital anomalies and mental retardation. Eleven cases with different anomalies like Fanconi's anemia, Seckel's Syndrome and other comprised 3.2% of the study.

The above results indicate that autosomes and X linked recessive genes are responsible for a significant number of MR cases. However, chromosomal analysis is expensive and requires expertise, therefore such studies should be undertaken in patients with significant anomalies and in those suspected to have some chromosomal anomaly, only then will such investigations be cost effective.

GEN/02. ETIOLOGICAL VARIABLES IN 361 CASES OF MENTAL RETARDATION

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Mental Retardation (M.R.) is a syndrome, i.e. a constellation of clinical manifestations with several etiological factors. An in depth investigation of each case is therefore essential for optimal management.

In clinical practice, often evaluation ends, once the diagnosis of M.R. has been made. This has caused considerable difficulty not only in treatment, but also in planning for ancillary services.

At our institute, we combine medical research along with the care, treatment, training and rehabilitation of the mentally handicapped.

In this paper the various etiological variables in 361 cases of mental retardation assessed between January 1989 and June 1990 old i.e. in the school going age group. The male : female ratio was 2 : 1. There was no predilection for any

socioeconomic or religious group. Parental consanguinity was present in 12% cases, the majority being Muslims. Family history of M.R. was obtained in 19 % cases.

The most common presenting symptoms were mental subnormality (62%), speech defect (51%), scholastic backwardness (21%). Details of prenatal and natal factors will be presented.

The most common etiological factor was Birth Asphyxia (22%), followed by Down syndrome (18%), post natal infections (Encephalitis - 5%, tuberculous meningitis - 4%, pyogenic meningitis - 4%, septicaemia - 1%), neonatal hyperbilirubinemia - 1%, Fragile X mental deficiency syndrome in 1% and other chromosomal anomalies in 3% cases. Some dysmorphic syndromes, viz. Seckel Syndrome were also diagnosed. No etiology could be identified in 24% cases. Majority (74%) were moderately or severely handicapped.

Biochemical tests for metabolic disorders and chromosomal analysis (including detection of fragile sites on the X chromosome) were done in all cases, the results of which will be discussed.

The role of preventive obstetric and pediatric care, prenatal and early postnatal diagnosis, genetic counselling, prompt treatment, training and rehabilitation will be discussed.

GEN/03. ROLE OF KARYOTYPING, AN APPROACH TO THE DIAGNOSIS OF CHROMOSOMAL DISORDERS

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Chromosomal aberrations are one of the common causes of recurrent early spontaneous abortions. Other factors which may be related with these abnormalities are dysmorphic features, unexplained mental retardation, multiple congenital defects, primary infertility, ambiguous genitalia and leukaemia. We collected 175 cases of cytogenic investigations over two years. Out of these 40 couples had been referred for history of repeated spontaneous abortions, 13 patients for primary amenorrhoea, 80 children with dysmorphic features and mental retardation. There were 4 cases for prenatal diagnosis, 40 cases (22.8%) involved in this study showed chromosomal abnormality. Of the 80 patients referred for repeated spontaneous abortions, 2 husbands revealed presence of balanced translocations and one female with single cell translocation was detected. Out of 13 cases referred for primary amenorrhoea, 3 cases of pure Turner's syndrome, 2 cases of mosaic Turner's syndrome, 1 XXX female, one translocation and one case of testicular feminization was encountered. The cytogenic examination of 80 children with dysmorphic features and mental retardation showed the presence of 18 cases of trisomy 21, 3 cases of translocation Down's syndrome, one case of trisomy 13, three cases of trisomy 18, one case of fragile X, two cases of XX male and one case of supernumary chromosome. Prenatal diagnosis by chorionic villi sampling was done in 4 cases, 2 for elderly mother and 2 cases with a previous history of Down's syndrome revealed the presence of cytogenetically normal fetus.

ENDOCRINOLOGY

*ENDO/01. CORRELATION OF MATERNAL IODINE STATUS AND THYROID FUNCTIONS IN THE NEWBORN

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Serum T3, T4, TSH and urinary iodine excretion were estimated in 102 women and their newborns to study the relationship of thyroid functions in the newborn and the iodine status of the mother. 22 mothers with goitres were included in the study. All mothers and newborns were clinically euthyroid.

Urinary iodine excretion was less than 50 ug/gm of creatinine in 38 mothers but their thyroid functions remained normal. Urinary iodine was lower in goitrous as compared to non-goitrous mothers -- 48.3 +(-) 14.4 and 56.7 +(-) 16.5 ug/gm of creatinine resp. ($p < 0.05$). A direct correlation was found between maternal and newborns urinary iodine excretion. A higher incidence ($p<0.001$) of elevated cord TSH values -- above 20 uU/ml -- was seen in newborns of mothers with low urinary iodine. Cord serum T3, T4 levels were unaffected.

Mean urinary iodine was significantly lower ($p<0.02$) and mean serum TSH significantly higher ($p<0.001$) in newborns of goitrous as compared to non-goitrous mothers. Serum T3, T4 and T3/T4 ratios of newborns of goitrous and non-goitrous mothers did not differ significantly. Cord TSH levels were found to increase with increase in the grade of the mother's goitre. It is concluded that iodine deficiency in the mother was the cause of hyperthyrotropinemia in the newborn and that newborns are more affected by iodine deficiency than their mothers.

ENDO/02. FILTER PAPER T4 SCREENING FOR CONGENITAL HYPOTHYROIDISM

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Neonatal screening for congenital hypothyroidism (CH) is now implemented in most industrialized parts of the world. In the past we had utilized cord blood TSH for Neonatal CH Screening of over 12,000 newborns and studied the feasibility of organizing such a programme. The study showed an incidence of 1:2500. The present study involved over 28,000 newborns (26,401 full term, 321 cord blood and 1294 preterm) and utilized Filter Paper (FP) T4 technique for CH Screening. FP samples of cord blood and/or heel prick blood between 24 hrs to 96 hrs after birth were collected on Whatman 3 filter paper for FP T4 estimation. Initially FP T4 values were determined at specific time intervals during first week of life in 885 normal controls. The mean control +(-) SD values for FP T4 in ng/ml were noted to be 121 +(-) 34.5 between 24 to 47 hours after birth, 115 +(-) 32.5 between 48 to 72 hours after birth and 105 +(-) 30 between 72 to 96 hours. Based on this pilot study the plan for screening considered FP T4 50-80ng/ml as borderline with recall by letters, and < 50ng/ml as highly suspicious with recall by home visit. Out of 25,244 adequately absorbed F.P. samples of full term newborns, 4775 (18.92%) infants needed recall. In all 2520 (52.8%) infants responded. Of the high risk 340 infants (1.35%) who had initial FP T4 < 50ng/ml, recalled by home visit, 283 (83.3%) re-

sponded. Hypothyroidism was confirmed biochemically, radiologically and by Tcm99 scanning and TRH testing whenever required. On thyroid scanning 3 had no visible thyroid gland (aplasia-hypoplasia), 2 had sublingual tissue and 1 dyshormonogenesis. All six hypothyroids had initial FP T4 level < 55ng/ml. However, three cases of CH with FP T4 level >80ng/ml. (Ranging from 93-143 ng/ml) were missed on screening and referred at a later age. The probable overall incidence of CH was 1:2804. Reasons for missed cases are discussed.

SOCIAL PAEDIATRICS

*SP/01. NUTRITIONAL PROBLEMS OF TRIBAL CHILDREN

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The present study involves screening of 5000 Adivasi children from various ashram schools and Tribal villages of Maharashtra. These villages were in remote most, unapproachable hilly areas namely Dhadgaon, Shirpur, Akkalkuva, Taloda, Jamana Nendwan Khurd in Dhulia district, Dharani Melghat in Amaravati district, Raver Taluka in Jalgaon district, Akole Taluka in Ahmednagar district, Ander-Maval area and some villages in Gadchiroli district.

It was observed that goitre was extremely common in Dhulia district. Protein energy malnutrition was common problem in all tribal villages. Over 50% children showed iron deficiency, vit A deficiency. Majority of the children took a poor diet barely meeting caloric or protein requirement. Concurrent infections and worm infestations were contributory factors. Sickle cell anemia, common hereditary hemolytic anemia in trials showed high prevalence in Dhulia, Jalgaon, Amravati and gadchiroli district. The findings are discussed in light of malaria hypothesis, iodine deficient in hilly regions and scarcity of essential food articles along with tribal superstitions.

*SP/02. ANTHROPOMETRY OF NEWBORNS

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Various measurements were taken of newborns of different gestational ages. The growth in the measurements were compared with western growth rates and they are presented in this paper. Simple measurements like height, weight and complex ones like Torso length, philtrum size, canthal distance etc. were taken. All these 22 parameters help in judging the nutritional status and also in dysmorphology detection in newborns.

*SP/03. NUTRITIONAL STATUS AND MORBIDITY IN PRESCHOOL CHILDREN OF URBAN ICDS

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Infants and preschool children constitute about 17% of the total population in our country. Nutritional status of the preschool children reflects the nutritional situation of the community. Malnutrition and associated morbidity states, in this group, have markedly reduced following the active contribution by I.C.D.S. projects. Present study was undertaken for assessing the nutritional status of preschool children covered by urban ICDS project and the association/correlation of several morbidity states and deficiency signs with malnutrition.

Material and Methods:

The study comprised of 104 preschool children attending 3 Anganwadies which were randomly selected from an urban ICDS block in Hyderabad. General information and age of the children were obtained from the register maintained by Anganwadi worker.

Measurements like Height, Weight, Mid arm circumference, simple indicators like weight for height and height for age were recorded

as per standard methods. Various morbidity states like Diarrhoeal disorders, Acute Respiratory Infections, Febrile episodes and exanthematous fevers were obtained from the mother by recall method. A thorough clinical examination was done for evidence of nutritional deficiency signs which were recorded in proforma and analyzed.

Observations and Results:

Of 104 preschool children examined, 20.19% were found to be normal and remaining 79.81% had various degrees of malnutrition. Severe Malnutrition (grade III) was observed in 5.7% of the study group (6 out of 104). 7 out of girls (87.5%) in the age group of 3 years were found to be affected maximally against 2 year old boys who were least affected (6 out of 9) 51.01% of the malnourished children were stunted. Marasmus was noticed in 6.73% of the cases and no case of Kwashiorkor was detected.

53.85% of children had nutritional deficiency signs, the largest being conjunctival xerosis (16.35%). Bitot spots (1.92%) and corneal opacity (0.96%) were observed in a very small group.

Largest number of children with grade I malnutrition (90.38%) had no morbidity states. Boys in the age group of 4 years and 2 years old girls, had the highest 'no morbidity states' (84.21%) and 75% respectively). Diarrhoeal disorders were responsible for maximum morbidity (10.5%) followed by ARI (7.6%).

By strict adherence of package of services rendered by ICDS project like supplementary nutrition, Nutrition and health education to women, Immunization and Vit.A prophylaxis, the nutritional status of preschool children could be improved and morbidity states be reduced.

*SP/04. HAEMOGLOBIN STATUS OF ICDS CHILDREN

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CONCLUSIONS

1. 89.02% of children suffer from anaemia (less than 11 gm%) in the age group of 1-6 years in the socio-economic group of ICDS area.

2. Children between 1-2 years have lowest haemoglobin 7.79 gm%

3. Severe malnutrition (Grade III & IV) is associated with low haemoglobin levels.

4. Mid arm circumference is a good indicator of malnutrition and children with low haemoglobin levels.

5. Iron and folic acid distribution in ICDS should include the following:

   1-2 years of age should be covered.

   Daily Iron requirement has to be met and it should be given daily for the whole year.

   Fortification of daily food-like salt with Iron and Folic acid will be a better method of Iron administration Supply of Iron and Folic acid should be continuous.

6. Supplementary feeds should started from 4-6 months of age along with breast feeds to improve haemoglobin levels.

7. Diarrheal disease prevention and control should be aggressive for anaemia control in children.

8. Deworming along with Iron and Folic acid tablet supply may give better result.

9. ARI prevention should include Haemoglobin estimation and Iron supplementation.

10. All the above measures may not make any dent unless sanitation is improved and water supply is made potable.

*SP/05. STUDY OF VARIOUS DEMOGRAPHIC FACTORS AFFECTING INTEREST OF URBAN ADOLESCENT GIRLS OF UDAIPUR CITY REGARDING BREAST FEEDING

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In India declining trend in the breast feeding by urban lactating mothers has caused great concern in recent past. As this may lead to snow ball effect i.e. as breast feeding become less acceptable as the prevalent method of feeding, most girls grow up without hearing much of breast feeding. Today's adolescent girl is tomorrow's potential mother. Feeding of her infant depends mostly on her environment and socio-cultural factors. The present study was done to know the various environmental and demographic factors affecting interest of 1000 urban adolescent girls in age group 13-15 years of Udaipur city regarding breast feeding. A pretested proforma containing multiple choice questions was filled by them and scoring was done as good or poor. Effect factors like socio-economic class, family pattern, living in or outside city walls, medium of learning and opting science or arts subjects were analyzed in this study. statistical significance was calculated by X2 & value of 'p'.

Desired level of knowledge was found in (57.4%) of girls. Girls having english as the medium of education (80%) and opting science as optional subject (73.8%). showed significant higher percentage of desirable knowledge. Socio economic status, belonging to nuclear and joint family or residing in or outside the city wall did not show any beneficial effect.

Observation of the present study highlights the urgent need to include infant feeding and rearing as a part of school curriculum, so that future mother get more interest in such an important aspect of her life.

*SP/06. HEALTH STATUS NEONATAL MORBIDITY AND MORTALITY IN NEWBORNS OF SLUMS OF RAIPUR

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538 newborns of six randomly selected slums of Raipur City were studied. Babies were followed up on 7th and 28th day with help of social worker. WHO criteria was used for reporting lay diagnosis of morbidity and mortality, 288 newborns were delivered in hospital and 250 at home. Three antenatal visits were done by 41(7.62%) cases only. 82% of home deliveries were by untrained persons. Mean birth weight in males and females was 2.58 +(-) 0.50 and 2.53 +(-) 0.53 kg. Head, chest and mid arm circumference in male newborns was 33.07 +(-) 1.81, 30.28 +(-) 2.33 and 9.1 +(-) 0.93 cm., respectively. Above values in females were 32.77 +(-) 1.8, 29.99 +(-) 2.36 and 9.0 +(-) 0.96 cm., respectively. 40.53% newborns were below 2.5 kg. at birth. Regression analysis showed head circumference of 31 cm. MAC of 8 cm. and chest circumference of 28 cm. has high specificity and sensitivity for predicting birth weight of 2.0 kg or less. There was very high

incidence of superficial skin infection (30.09%) cord sepsis (6.58%) 39(8.5%) neonates had diarrhoea and 18(3.95%) had ARI, 5(1.1%) had tetanus. Deaths in first 7 days and total death in neonatal period were 52/1000 and 72/1000. Common causes of death were Septicemia (31.55%), asphyxia (21.05%), aspiration pneumonia, (18.42%), pulmonary hemorrhage (13.16%) and prematurity (5.26%). Average weight gain in 4 weeks was 550 g. In 179 neonates who were healthy during 4 week gained 730 g. of weight.

*SP/07. IMPACT OF MATERNAL LITERACY STATUS ON BREAST FEEDING PRACTICES

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Maternal literacy status has a strong influence on infant feeding and rearing, and ultimately child survival. This paper presents the findings of a survey which tried to assess the impact of a mother's educational level on the breast-feeding practices adopted by her. The study was carried out in two semi-urban areas in Pune cantonment by a house-to-house survey. Eligible women were those who had at least one child between three and twenty-four months of age. Interview technique was used to collect data on a pretested proforma from 121 mothers between Jan'88 and June '88. Higher maternal literacy favoured her knowledge of desired norms and practices and hence their adoption-early initiation of breast-feeding, withholding prelacteal feeds, importance of colostrum, weaning at desired age, increased diet during lactation, immunization, growth chart maintenance and oral rehydration. All these were positively related to mothers' education status, with statistical significance ($p<.05$).

SP/08. STUDY OF 216 CHILDREN WITH CEREBRAL PALSY

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Despite tremendous developments achieved in modern medicine, the problem of Cerebral Palsy still haunts us to look at it with renewed vigor. Improved prenatal and perinatal care have not achieved desirable impact in reducing the incidence of Cerebral Palsy. Our study highlight's necessity of steps on warfooting basis to bring down the handicaps of spastic children instead of blossoming one's.

Our 4 years study of 216 children of Cerebral Palsy below 12 years age is evaluated and analyzed on the data of epidemiology, etiology and clinical, with a special emphasis on prenatal and perinatal events that are potential causes of cerebral palsy and their relevance of being preventable ones. Apart from Neurological evaluation all cases are subjected to investigations like L.P., X-ray skull, Fundus, Ultrasound, I.Q. test (Draw-a man test Ravin matrices, Seguin form board). Some cases are referred to higher institutes for C.T. Scan, EEG etc...

Epidemiological data shows - AGE - below 1 year - 13 cases (6%), 1-3Yr-55 (25.46%), 4-6Yr-68 (31.48%), 7-9Yrs-42 (19.44%) 10-12 Yrs-38 (17.6%), SEX - M : F 133 (61.57) : 83 (38.43%); RURAL : URBAN - 125 (58.87%) : 97 (42.12%); SOCIO-ECONOMIC STATUS - Lower 123 (56.94%), Lower Middle - 87(40.28%), Upper Middle - 6 (2.77%); BIRTH HISTORY - Home deliveries 192 cases (88.89%) in which 156 (72.22%) by untrained personnel, 36(16.67%) by trained personnel; Hospital deliveries 24 (11.11%); ETIOLOGICAL DATA SHOWS - History of birth asphyxia and trauma 84 cases (38.89%); History of Prematurity and Low birth

weight - 41 cases (18.98%) and in remaining cases clear cut cause could not be made out; CLINICAL DATA SHOWS - Types of Cerebral Palsy - Spastic 172 (79.63%), Extrapyramidal - 18 (8.33%), Atonic - 12 (5.55%), Mixed - 14 (6.49%); Incidence of associated problems is - speech disturbances - 143 (66.2%), deafness - 88 (40.74%), Behavioral problems - 27 (12.5%), Convulsions - 27 (12.5%), Microcephaly - 25 (11.5%) and mental retardation in 175 cases (profound - 11 (5.1%), Severe - 106 (49.07%), Moderate - 58 (26.85%) Borderline to Normal intelligence in remaining 41 (18.98%).

THE STUDY CONCLUDES - 1. Majority of cases (68.54%) presented very lately after 3 Yrs are due to inability to recognize the C.P. at on early age because of unawareness of normal milestones of development of children. 2. Male dominance (61.57%) due to over pampering by parents. 3. High prevalence of lower socio-economic status (97.22%) and rural (58.87%) groups reflect multifactorial etiological factors like Poverty, Illiteracy, Ignorance, Lack of Medical aid and facilities, which stress the necessity of improvement in the standard of living of all people as well as timely Medical aid. 4. High prevalence of Home deliveries with untrained dais and Low birth weight babies reveal the urgency and importance of Health Education and delivery facilities at doorstep by trained dais and Health workers. 5. Though our study highlighted the preventable etiological factors like birth asphyxia and trauma, prematurity and low birth weight, still 42.13% cases need a thorough etiological exploration.

SP/09.EPIDEMIOLOGICAL FACTORS IN UIP DISEASE: A HOSPITAL BASED STUDY

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The developing countries like India have very high under 5 mortality rate of six vaccine preventable diseases accounts for a major part and take a total of 5 million deaths every year. There are many epidemiological factors which leads to high incidence of these diseases in the community.

Present study was undertaken to assess the impact of some epidemiological factors on the incidence and mortality of UIP diseases in children admitted in Kamla Raja Hospital, Gwalior between 1 January to 31 December 1989.

These six killer diseases accounts for 22.3% of total admission, highest percentage was of tuberculosis. 0-2 years was the common age group of occurrence of these diseases. 51.1% of cases belongs to rural and 48% to urban background with male preponderance. 90.7% were of Hindu community and 9.1% of Muslim. Majority of cases were from low socio-economic group accounting for 91.5% of cases. 84.8% of children were un-immunized and 15.2% were either fully or partially immunized. 0.71% of the cases got vaccination from peripheral sources. 1 case out of the 267 of Measles was immunized for measles. September to October is peak period for Polio and Tetanus neonatorum. Maternal education is also an important factor, 75.47% of mothers were illiterate. Case fatality rate was highest for tetanus neonatorum 76.9%.

Observation suggest that high incidence of UIP diseases in low socio-economic, ignorance, illiterate, families living in over-crowded area with poor environmental sanitation belonging to rural background. Higher case fatality of tetanus neonatorum suggest that existing health delivery system is not adequate. Majority of the children were un-immunized. Suggestive immunization campaign have to be intensified in rural areas along with community participation.

SP/10. STUDY OF CORRELATES OF INTELLIGENCE IN SCHOOL GOING CHILDREN

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To assess the intelligence of school children aged 10-14 years, Tripathi and Joshi's nonverbal group test was applied on 240 children (163 male and 77 females). The effect of environmental variables such as age, sex, Socio-Economic Status, Caste, type of family, number of siblings and nutrition. Over I.Q. and scholastic performance was studied and statistically scrutinised. Statistically significant positive correlation between I.Q. and age, I.Q. scholastic performance was found. A negative correlation between I.Q. and family size was observed. There was no statistically significant correlation between I.Q. and sex, Socio-Economic status (SES), caste, nutrition and type of family.

SP/11. EFFECT OF PERIODIC DEWORSENING ON THE NUTRITIONAL STATUS OF PRE-SCHOOL CHILDREN IN A RURAL AREA

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In a village area a cohort study of 380 pre-school children, a incidence of parasitosis was found, wherein 80% of the Children were tested positive to one or the other parasite. Of these, 64% had ascariasis and 14% had Giardiasis.

From this village, a Nursery School wherein 80 pre-school children were attending, were further analyzed and followed up for 5 months to know the effect of periodic deworsening in them. They were divided into 4 groups of 20 each. Metronidazole 20 mg was given for 5 consecutive months and Albendazole was given once. Single blinding was done so that a child got the buy or placebo.

Group A (20 cases) Placebo only
Group B (20 cases) Metronidazole + Albendazole (single dose)
Group C (20 cases) Metronidazole + Placebo
Group D (20 cases) Albendazole (single dose) + Placebo

These children were examined periodically every 15 days and at the end of the study, recording was done and results were analyzed.

It was found that at the end of the study 11% of the children, tested positive for ascariasis and 2.4% tested positive for giardiasis.

Children from treatment groups had gained better weights compared to placebo group (p .001).

The study design was such that all variables were kept constant like socio economic status, area, diet intake was not altered, environment remained unchanged. Results showed uniform beneficial effect on the drug treated groups.

Hence periodic administration of drugs in endemic areas should form an important part of intervention programs.

SP/12. THALASSEMIA WITHOUT FETAL HEMOGLOBIN - A NEW HEMOGLOBINOPATHY

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We herewith report a family with 2 children suffering from Thalassemia like syndrome. The propositi have transfusion dependent anemia from first year of life. But both these children showed negligible presence or absence of foetal hemoglobin. This finding is not reported anywhere. The patients on further investigations like finger printing and peptidogram show the presence of new hemoglobin. Findings are discussed.

SP/13 SICKLE CELL DISEASE - ITS FREQUENCY AND MORTALITY STUDY

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In last 10 years, this centre has studied more than 10,000 subjects for the presence of sickle cell hemoglobin covering most of districts and population groups through out Maharashtra.

This study has revealed that in some caste groups there is high incidence of sickle cell disease. Differential mortality studies were carried out on these population caste groups from different regions of Maharashtra. Differential mortality rates were estimated.

Chi-square values were checked for observed and expected homozygous in different population groups. It is observed that chi-square value is significant at 5% level only for one tribal group 'Pardhan'. Chi-square value was not significant for sickle cell homozygous in Rajgond, Madia, Halabi, Kalar, Teli, Khaire Kunabi, Dhanoje Kunbi, Pawara, Bhill Kokana, Banjara caste groups.

SP/14. CROSSOVER HEMOGLOBIN IN A THALASSEMIA FAMILY

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A family of 4 individuals, parents and two children is reported. The children have severe transfusion dependent anemia with reticulocytosis high serum iron indicating hemolytic anemia. They have negligible or absent foetal hemoglobin. Further studies were done at protein level and DNA level. These point out that the patients could be a new cross over hemoglobin due to Game-Beta cross over and this is combination with thalassemia trait has resulted into thalassemia like syndrome.

SP/15. PREVALENCE OF XEROPHTHALMIA AND RELATED MORBIDITY IN UNDER FIVE CHILDREN IN AN URBAN SLUM

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Four hundred and ninety eight children in the age group of 0-5 years were examined in an urban slum by door to door survey. The ocular manifestations of vit.A deficiency and nutritional status of each child were assessed. The prevalence of xerophthalmia was found to be 10.04%. Maximum prevalence was detected in the age group of 3-4 years (18-3%) followed by 4-5 years (14.3%). Among the various ocular manifestations of vit.A deficiency, night blindness was most prevalent (3.6%) followed by conjunctival Xerosis (2.8%) and Bitot's spots (2.4%). Prevalence of conjunctival signs above 3 years of age was significantly higher (8.1%)

than below 3 years (2.08%) ($p<0.05$). Corneal signs were more prevalent in children less than 3 years of age. Prevalence of Xerophthalmia increased with associated protein energy malnutrition. Thus 23% children in malnour ished group suffered from Xerophthalmia as compared to only 0.6% among nutritionally normal children.

All children were followed up for 9 months regularly after treating Xerophthalmic cases with vit.A. Seventy percent children were cured during the study period. The incidence of respiratory and diarrheal diseases in Xerophthalmic children also came down after treatment with vit.A.

SP/16. A COMPARATIVE STUDY OF SOCIO-ECONOMIC,NUTRITIONAL AND HEALTH STATUS OF URBAN AND AGRICULTURE CHILD LABOURERS

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A comparative study of 1259 working children in different unorganized sectors of urban areas and agricultural fields of rural areas was undertaken. The study included 759 urban and 500 rural children. Nearly all the families were nuclear in both sectors, 60% of urban and 75.8% of rural families had more than one child. Literacy rate of the rural parents was slightly more. Only 13% families had pucca one storied building in rural areas compared to 30% of urban families. 70% of urban families had pacca and semipacca latrines where as 60% of rural families have the same, the rest used open field for sanitation. 99% of rural and 6% of urban families used tube well water for drinking purposes. The rest use tap water in both the cases. School was not attended at all by 55.8% rural and 33.6% of urban working children and among the rest the drop out rate was 95% in urban and 90% in rural children. Remunerations were not given to 54% of rural children working as family helpers compared to 8.1% of urban children working as apprentices, food and shelter was however provided to the unpaid workers in both the sectors. The average monthly income of Rs.50-100 was 57% and 9.2%; and more than Rs.150/- in 32.9% and 32.2% of urban and rural children respectively. In the comparative study of anthropometric measurements of height, weight and chest circumference - the mean height of urban children of all ages except 9 years was greater, the mean weight was more in urban children apart from those of 7 and 14 years of age and the mean chest circumferences of urban children of all ages was greater than the rural children. Different grades of malnutrition were studied and observed as normal in 44.32% in male and 70.4% in female urban children and 22.38% in male and 11.24% in female rural working children. Grades I-IV malnutrition was present in agricultural child labourers of both sexes and urban children had grades I-III malnutrition, none of them had grade IV malnutrition. RTI, GI and skin diseases were prevalent to a greater extent amongst urban children. On the other hand rural children suffered more for anaemia, eye diseases including manifestations of Vitamin A deficiency, other vitamin deficiency diseases, E.N.T. troubles and teeth and gum problems. Addiction to bidi/cigarette, ganja were the evil practices of the urban child workers. No such addictions were detected amongst agricultural labourers.

SP/17. POISONING IN CHILDREN

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Poisoning is one of the common Paediatric emergencies. 95 cases of poisoning in children

treated in the department of Pediatrics, St. John's Medical College Hospital, Bangalore, between January 1988 and January 1990 were presented. There were 45 males (47.5%) and 50 females (52.6%).

These cases were grouped as accidental poisoning (73.7%) and intentional poisoning (26.3%). Accidental poisoning was common in children below 5 years of age. Intentional poisoning was common in children between the ages of 6 to 12 years.

The etiological agents were grouped into Organophosphorus compounds (30.5%), Sedatives and Tranquilizers (23.3%), Hydrocarbons-Kerosene (17.9%), Iron (9%) and others (19.3%).

Organophosphorus compounds and Sedatives were commonly used in intentional poisoning. Kerosene, Iron and other miscellaneous agents were common in accidental poisoning. 44.8% of cases with organophosphorus poisoning were admitted within two hours of consuming poison. Nearly half of them had altered sensorium by then. 81.2% of cases of Kerosene poisoning were admitted within two hours of consuming poison. 25% of them had altered sensorium by then.

Varying degrees of leucocytosis and hyperglycemia were seen in all cases of Iron poisoning. Pseudocholinesterase levels had no definite correlation with prognosis in Organophosphorus poisoning. Leucopenia and altered blood gas levels indicate poor prognosis.

Psychiatric evaluation was done in 77.3% of intentional poisoning cases. Suicidal tendencies (33.3%) and Depression (26.7%) were the commonest causes.

All these patients were treated by the conventional and standard methods of treatment. There were seven deaths (7.3%). Only one was due to Kerosene poisoning and the remaining were due to Organophosphorus poisoning.

SP/18. REACTION OF PARENTS AND PATIENTS TO ILLNESS AND HOSPITALIZATION

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Patients admitted to the hospital with acute or chronic illness whose hospital stay was for more than 10 days and age was between 7 and 14 years were selected. The parent and child pair were interviewed using a questionnaire and their reactions noted and analyzed. The aim of the study was to determine the reaction of parents and the child to illness and hospitalization.

A total of 40 parents were interviewed and 38 children (patients) were interviewed. 20 children had acute illness and 20 had chronic or recurrent illness. Of these 6 had mild disease, 26 moderate disease and 8 severe disease. Cost of treatment was minimal or average in 31 and expensive in 9. Prognosis was good in 23 and bad in 27. Of the 40, 29 were treated earlier: 21 by allopathic medicine and the rest by other means. 18 parents knew the scientific basis for the illness, 7 thought it was due to fate/bad luck and 15 did not know why the disease occurred.

The degree of worry and apprehension was found to be directly proportionate to severity of illness. 12 parents were extremely worried, 16 were moderately worried and 12 showed minimal reaction. Reasons for worry included prognosis (33) financial problems (32) household inconvenience (32) and loss of work (28). Problems caused by hospitalization included household

inconvenience (33) financial problems (32) problems of looking after other children (29), problems of transport and loss of work (29) social reactions (7). Most patients were not ware of the nature of illness. All patients had some degree of fear and apprehension. Most common reasons for reaction included, inconvenience to self (28) school interruption (22) inconvenience to parents (19) and peer reaction (14).

Conclusions:

A significant number of patients and their parents were not aware about the illness. In addition to the reaction to the disease per se, other factors such as financial problems household inconvenience, loss of work played an important role. Patients reaction was mainly due to inconvenience to self or parents, school interruption and peer reaction.

Explaining to the child and parents about the disease, making hospital stay short, planned admissions and financial help, when indicated would help in making patients and their parents less anxious and worried during childhood illness and hospitalization.

SP/19. ATTITUDE AND ACCEPTANCE FOR 'ONE OR TWO CHILD NORM' PATTERN OF FAMILY CONTROL AMONGST YOUNG MOTHERS IN EASTERN ORISSA

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This study was carried out with a sample size of 200 young mothers by questionnaire methods to find out various aspects of their attitude and acceptance for 'one or two child norm' pattern of family control, which is the urgent need for our country.

The females consist a heterogenous group coming from different religious, educational and socio economical backgrounds who attended the well baby clinic of S.V.P.Sisu Bhavan Cuttack.

The number of Green Card holders were found to be more amongst educated mothers than less educated ones. About 20% have reported to have plan for Green Card in future.

The negative attitude for acceptance were mainly doubt for child survival, preference to male child, religious background and other taboos etc.

An awareness and suggestion for accepting the benefit of family control were also canvassed by educated female volunteers.

SP/20. HYPERACTIVITY, ATTENTION DEFICIT AND CLASS ROOM PERFORMANCES AMONGST SCHOOL CHILDREN

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The terms 'hyperactivity' and 'Attention - Deficit Hyperactivity Disorder' (A.D.H.D.) are used inter-changeably in research literature. It refers to children characterized by pervasive problems with impulsivity, in attention, inter personal friction and in adequate self regulation.

This study was carried out in 60 Primary School Children in the age group of 6 to 9 years, 30 each from an Oriya medium (regional language) and from an English medium school.

Both the groups of children were matched on intelligence score obtained from 'RAVENS PROGRESSIVE MATRICES FOR CHILDREN'.

Some tests of performance measures relating to verbal skill reasoning and arithmetic ability were administered to all children. A.D.H.D. obser-

vations were made on the basis of 'DSM-III-R DIAGNOSTIC CRITERIA' for 1987.

The findings suggest that class room climate might influence the performance of A.D.H.D children. It is also emphasized that much more attention should be devoted to developmental analysis and to the ways in which patterns of disruptive and attentive behavior are transformed by the child's experience.

SP/21. INFANT FEEDING & REARING PRACTICES IN SCHEDULED TRIBE MOTHERS OF UDAIPUR DISTRICT

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Making health a priority for people is much needed. Though Scheduled tribes form a substantial population of rural population of south west Rajasthan, the gap in our knowledge regarding infant feeding and rearing practices and believes amongst them still exists. A study hence aimed to assess knowledge and attitudes for it effect on nutrition status in tribal lactating mothers of infants in 1-4 years age. 10 Anganwadi centers of rural ICDS tribal block were selected. A total of 165 mothers were interviewed and a pretested proforma was filled by one of the authors. Out of 165 mothers 65(30%) were interviewed. Nutritional status of infant was assessed as weight for age. The knowledge and practices were analyzed. Effect of demographic factors like socioeconomic status and family pattern on it was studied. Believes and opinion were calculated in percentage population under following heads. Perinatal care, Breast feeding, prelacteal feeding, weaning and top feeds, care and rearing of infants. According to total score attained by a mother either good, fair or poor score for each aspect. Good was desired level of in the study.

62 (95.38%) mothers belonged to poor socioeconomic status, while 48 (73.85%) preferred to live in nuclear family pattern. Out of 65 infants none was found in newborn period, in age group 3-6 month and 48 (49.8%) were between 6M-1 yr age. Male were 34 and females were 31. PEM grading was done by weight for age 43 (77.1%) infants were healthy, 12 (20.4%) and 1 (1.7%) had PEM grade 1 & 2 respectively.

Overall good score was found in 4 (6.15%) mothers. Belonging to upper socioeconomic class had significant positive effect on knowledge of mothers. Though all the mothers with good knowledge score lived in nuclear families, no beneficial effect could be attributed to such living pattern. Effect of knowledge score on health of baby showed that percentage incidence of PEM increases with poor knowledge. Only 9 (13.84%) mothers had good perinatal care knowledge. Anganwari worker did not helped in conducting the delivery. Use of Dantri, knife, or other sharp instrument to cut cord was found in 55 (74.7%). 4(6.16%) mothers showed good knowledge of breast feeding but 44 (67.7%) mothers discarded colostrum on the grounds of it being dirty, harmful or traditional practice. 23 (35.3%) mothers had good knowledge regarding weaning and top feeds, but only 13 (20%) weaned babies between 3-6 month age.

It can be concluded from this study that health of infant can become a priority in trials only when present method of its dissemination in modified according to its needs.

SP/22. CHILDREN WITH CEREBRAL PALSY: ATTITUDES AND BELIEFS OF THE PARENTS

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The parents of 26 children with Cerebral Palsy were interviewed to determine their attitudes and beliefs in regards to Cerebral Palsy, using a prepared questionnaire. In regards to thee cause of C.P., 1/3 felt it was due to fate, 1/3 felt they were cursed and the rest felt it was a medical problem. All parents admitted to initial reactions of anger, guilt, depression and anxiety at the time of diagnosis. Most parents (53.8%) consulted 3 or more doctors before accepting the diagnosis. All except one were diagnosed in the first year itself. 85% of fathers and all mothers favoured domestic care though in 73.1% of cases it took more than a year to accept and adapt to the child. Only 16.7% (4/26) considered the child to be a burden and 3 mothers admitted to hatred of the child. Of the fathers 57.7% (15 26) helped to look after the handicapped child. Two fathers were indifferent and 34.6% (9/26) totally neglected the child. Though 80.8% (21/ 26) of mothers felt they spent more time with the child, they did not feel that the siblings were neglected. In 70% of cases the siblings helped the mother in looking after the child and in 85% of cases the normal siblings played with and were affectionate towards the child with CP. In 80.8% (21/26) cases the relatives were helpful 96% (25/26) of parents continue to believe that the disease is completely or partially curable.

SP/23. VITAMIN 'A' DEFICIENCY IN BANGALORE URBAN SLUMS - A BASELINE STUDY

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A preschool child with 'Bitot spots' on conjunctiva is considered to be suffering from active Vitamin 'A' deficiency. Vitamin 'A' deficiency is more common in poorer socioeconomic groups of population. The prevalence of Vitamin 'A' deficiency was studied among children in the age group of 1 + to 9 + years in slum areas in Bangalore city, where the National Vitamin 'A' prophylaxis programme is not in operation. 3622 children in 32 slums were examined. The overall prevalence of Bitot spots in these children was 2.95% with 2.2% in the preschool children (1-5) and 3.96% in the age group of 5 to 9 years. The peak prevalence of Bitot spots (5.3%) was observed at the age of 6+ years. Prevalence increased gradually from 2+ to 6+ years of age and there was a declining trend from 7+ to 9+ years of age. In muslim children the prevalence was significantly lower (1.33%) as compared to other children. Significant male preponderance in the prevalence was another observation. Applying the WHO criteria for community diagnosis of Vitamin 'A' deficiency, the present study highlights the significant prevalence of Vitamin 'A' deficiency in urban slums and hence, the need to introduce the Vitamin 'A' prophylaxis programme in Urban slums also.

SP/24. LACTATION FAILURE-CAUSES AND MANAGEMENT - A HOSPITAL BASED STUDY

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75 mothers with lactation failure were studied whose less than 4 month old babies were admitted to the hospital. Findings of a detailed history taking and clinical examination were noted on a working proforma. The various causes of lactation failure were determined and the relationship to various factors analyzed. The commonest cause of lactation failure was insufficient milk or no milk (80%). The age, parity, education, socioeconomic status, religion, family

structure and urban Vs rural status of mother - all had a bearing on the occurrence of lactation failure.

An attempt was made to relactate all these mothers. The outcome was successful in 69.3% cases and failed in only 4% cases. In 26.7% cases, we cannot predict the outcome as the mothers hospital stay was very brief with no followup.

SP/25. A CLINICAL PROFILE AND FUNCTIONING OF C.G.C. OVER 5 YEARS

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The child guidance clinic is a team work involving multidisciplinary specialists committed for the upbringing and betterment of these unfortunate child folk. The C.G.C. is run by the Department's of Pediatrics, Psychiatry and Speech therapist of Deaf-mute School of T.T.D., at O.P.D. of S.V.R.R. Hospital, Tirupati on every Wednesday from 9 a.m. to 1 p.m.

Our 5 year study of 544 children below 12 years age highlights the morbidity pattern, psychosocial problems and need of interaction of Multidisciplinary specialists in counselling the needy and to stress the importance of running C.G.C. at various levels. All children are subjected to investigations like X-ray skull, Fundus, ultrasound, hearing tests, I.Q. tests (Draw a man test, Seguin form board test, Ravin Mattress). Some are referred to higher institutes for C.T. Scan, N.M.R., E.E.G. etc. P.G. students of social work and Home Science are assigned to study the environs and follow-up the children with poor scholastic performance with disturbed family dynamics, for a good rapport with teacher, doctor, parents and the child. It was very fruitful.

Epidemiological strata shows - Population distribution in rural (287) and urban (257); Age - less than 1 year - 16 cases (2.94%); 1 to 6 years - 247 (45.41%); 7 to 12 years - 281 (51.65%); peak age was 4 to 6 years - 163 (29.96%); Sex - Male : Female 351 (64.52%) : 193 (35.48%); Socio-economic status - Low - 324 cases (59.56%); Lower middle - 205 (37.74%); Upper middle - 14 (2.57%); Upper - 1 (0.18%); Deliveries - Home - 476 (87.5%); Disturbed family dynamics - 26 cases (4.78%) in the form of sibling rivalry - (3), parental deprivation-(5), marital disharmony-(8), broken families - (6), loss of family members - (4).

34 cases (6.25%) brought by over anxious parents are declared as normal. Remaining 510 cases are grouped as follows: Group A - 338 cases (62.14%) are due to organic diseases; cerebral palsy - 216 (39.72%), post encephalitic sequelae - 21 (3.86%), Post meningitis sequelae - 12 (2.21%), deaf-mutes - 21 (3.86%), epilepsy - 63 (11.58%), down's syndrome - 5 (0.91%); Group B - 116 cases (21.32%) are due to psychiatric problems, Hysterical Neurosis - 28 (24.13%), Stuttering - 23 (19.82%), Conduct disorders - 15 (12.93%), Hyperkinesis - 7, school backwardness - 6, psychosis - 7, enuresis - 4, depression - 4, psychogenic vomiting - 4, breath holding spells - 3, learning disability - 2, somnambulism - 2; GROUP - C - 56 cases (10.29%) are mixed variety i.e., organic diseases and psychiatric problems - Mental retardation with behavioral problems - 19, mental retardation with behavioral problems and Neurological deficit - 18, Epilepsy with behavioral problems - 12, Epilepsy with mental retardation and behavioral problems - 7, in addition to the 27 cases of cerebral palsy with behavioral problems.

This study concludes:

The population distribution among rural and urban was equal there was male predominance,

the peak age was 4 to 6 years (29.96%), High prevalence (97.30%) of lower - E. S. strata, 87.5% of Home deliveries, a contributory factor to the handicap. Consanguinity 12.5%. Of 544 cases, 338 (62.14%) had primary organic neurological deficit; pure psychiatric problems - 116 (21.32%), mixed problems - 56 (10.29%).

This study highlights

1. To run C.G.C. clinic at every teaching hospital.

2. Proper delivery facilities at rural levels to prevent cerebral damage due to birth trauma.

3. More number of liaison-social workers for a better rapport.

4. To improve literacy and uplift poverty line for a better understanding and living.

5. Making publicity and creating awareness among common people.

6. Importance of team approach to a problem child, to enable him to grow up as a sound healthy adult; to build up a healthy nation.

RESPIRATORY

*RSP/01. A STUDY OF HEAD POSTURE CHANGES BEFORE AND AFTER ADENOTONSILLECTOMY IN CHILDREN PRESENTING NASO-RESPIRATORY OBSTRUCTION

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Head posture is extended in patients with chronic nasal obstruction, and this is reversed after removal of the etiologic factor. In view of this, the present study was taken up to assess the head posture changes in patients with chronic nasorespiratory obstruction before and after surgery with a time interval of six weeks.

20 children aged 9-12 Yrs who had chronic nasal obstruction were included in the study. The assessment of the airway patency was done both by an Oto-Rhino-Laryngologist by rhinoscopy and by Orthodontist by lateral cephalograms and subsequent surgery was carried out.

Lateral cephalograms of these patients were obtained before and after surgery in natural head position (NHP), by the use of a fluid level bubble device. The use of the bubble device made it possible to check the NHP without subjecting the patient to multiple X-ray radiation. This was a distinct advantage of the fluid bubble device.

Various angular measurements lie SN/TV and FH/TV were compared before and after surgery which indicated that significant change in the posture had occurred, from extension to flexion subsequent to surgery.

There was a highly significant increase in the dimension of upper airway passage subsequent to surgery. The plane angle of mandible was seem to be more in higher age patients.

*RSP/02. ASSESSMENT OF CLINICAL CRITERIA FOR IDENTIFICATION OF PNEUMONIA

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Presently in the ARI control programme, the diagnosis of pneumonia is based on history of cough and respiratory rate more than > 50/min. Doubts have been raised about the reliability of this parameter. In a prospective study, we evaluated comparative efficacy of cough and respiratory rate > 50/min with combinations of cough and respiratory rate > 40/min, rapid breathing and respiratory rate > 50/min, rapid breathing and respiratory rate > 40/min and rapid breathing and/or chest wall retractions. The study included 554 infants and children, who had radiologically proved pneumonia and 651 who had URI (cough, running nose with or without fever). History of cough and respiratory rate > 40/min, had the best balance of sensitivity and specificity at all the age groups considered (Table). The second best combination of signs was respiratory rate >50/min and/or chest wall retraction. The presently used combination of cough respiratory rate > 50/min for selecting ARI cases for antibiotic therapy is less sensitive and specificity as compared to above mentioned parameters, in all age groups, especially in children 36 months and above. Hence, we recommend that history of cough and respiratory rate > 40/min should be the criteria for diagnosis of pneumonia and selecting patients for antibiotic therapy and ARI control programme.

Comparison between sensitivity (Sen), specificity (Sp), positive predictive (PP) value and negative predictive (NP) value of cough + R.R. > 40/min and cough + R.R. > 50 min, for diagnosis of pneumonia in infants and children.

Age in months	No.of children studied/ Pneumonia/ URI	Cough and R.R. > 40 min Sen./Sp	PP/NP
0-3	131/141	95/92	98/95
4-6	72/80	97/94	93/98
7-11	66/78	100/90	89/100
12-35	142/146	93/99	98/94
> 36	76/161	71/99	96/88

Age in months	No.of children studied Pneumonia/ URI	Cough + R.R. > 50/min Sen./Sp	PP/NP
0-3	131/141	85/98	97/87
4-6	72/80	66/75	/75
7-11	66/78	83/96	95/87
12-35	142/146	95/100	/100
> 36	76/161	38/100	/77

RSP/03. BRONCHOPNEUMONIA IN CHILDREN A REVIEW OF 2000 CASES

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Acute respiratory infection (ARI) are one of the leading causes of morbidity and mortality in preschool children. At the institute of child health and hospital for children (ICH & HC), Egmore, Madras, ARI formed 26.5% of all admissions and contributed to 8.1% of all death in 1989.

A review of 2000 cases of bronchopneumonia cases admitted to the ICH & HC, Madras 1989 was undertaken to study the age pattern nutritional status immunization status and other associated morbidity and their influence on the outcome in bronchopneumonia. 1984 children (99.2%) belonged to families from low socio economic status as ICH & HC, Madras is a government hospital offering free treatment to poor income group. 1514 (75.7%) were from Madras city and around and 486 (24.3%) were from the neighboring rural areas of Tamil Nadu and Andhra Pradesh.

RSP/04. MORTALITY AND MORBIDITY OF RESPIRATORY TRACT INFECTIONS IN PATIENTS ADMITTED TO VVCH, BANGALORE

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Respiratory tract infections are one of the common modes of presentation in outpatient cases and in children admitted to the wards. This is one of the leading causes for mortality and morbidity both in developing and developed countries.

Acute respiratory tract infections account for one third of the deaths during infancy. Early recognition and Institution of appropriate treatment will reduce both mortality and morbidity.

Total No. of cases admitted during the study period were 388. The pea age of onset of infection was between 6 months to 2 years of age (62%). Sex ratio showed slight male preponderance i.e. 1.2:1.

Acute respiratory infections constituted 325 cases (83.76%) of which Bronchopneumonia were 202 (62.18%), Lobar pneumonias 8 (2.46%), Laryngotracheobronchitis 6 (1.90%), Bronchiolitis 13 (4%) and lower respiratory tract infection in 52 cases (15.3%). Among children with bronchopneumonia, Measles was the predisposing factors in 42 cases (20.1%). Chronic respiratory tract infections constituted 63 cases (16.23%) out of which pulmonary tuberculosis was identified in 57 cases (14.6%) and Bronchiectasis in 6 cases (0.5%).

Duration of hospitalization was between 9 to 14 days in 64% of cases. Protein energy malnutrition was present in 68% of cases (Grade I-IV IAP classification). Gastroenteritis was associated factor in 12% of cases.

Among the study group 21 cases died (5.4% of total cases). Slight male preponderance noted 1.4:1. Measles was associated in 8 cases (38.09%), Gr III-IV protein energy malnutrition with multiple vitamin deficiencies in 4 (19%) cases and moderate to severe dehydration in 8 cases (38.09%) Bronchiolitis was the cause of death in one case (5%).

Respiratory tract infections are the common cause of presentation in outpatient attendance as well as hospital admissions. Associated conditions like protein energy malnutrition, gastroenteritis increase the incidence of mortality and morbidity.

RSP/05. A STUDY OF CHRONIC LOWER RESPIRATORY DISORDERS IN CHILDREN

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Chronic lower respiratory diseases can be described as orphan diseases in the sense that they are low frequency diseases and are often neglected in research and treatment development. But they cause considerable morbidity in the affected children, though mortality is very low. In the present study, attempt was made to study the magnitude of the problem of chronic lower respiratory illness in children in relation to other respiratory illness,the etiology and predisposing factors and the mortality and morbidity in children from 0-12 years as seen in hospital practice and in southern coastal India during a period of 12 months.

In the present study, out of the total Pediatric respiratory problems of 10,000, 47 children had chronic lower respiratory problems. The age distribution of the patients ranged from 3 months to 12 years, though 27 patients belonged to the school age i.e. 5-12 years. Atelectasis was found to be the commonest cause of chronic cough is infancy, atelectasis with bronchiectasis is in the pre-school age, and bronchiectasis was the cause in the school age. Tropical pulmonary eosinophilia was found in 7 children of which 6 belonged to 5-12 years. Male female ratio was found to be 1.47:1. Amongst the predisposing factors, measles infection was the commonest antecedent factor in 19 cases (40.4%). Past history of pertussis was elicited in 6 cases and tuberculosis in 8 (16.8%). Chronic cough was the presenting symptom in all cases. Expectoration was present in 30 cases and failure to thrive in all these cases. 72.4% of these children were malnourished. 68.1% of these children were partially immunized with DPT, BCG, OPV. None of them had received measles vaccine. On Lab. investigation 29 cases were anemic and seven children had significant Eosinophilia. 5 children were tuberculin positive, sputum culture did not contribute to the aetiology. Cystic shadows were the commonest abnormality followed by atelectasis on radiography. Diffuse in involvement was seen in 20 cases. On X-

ray and focal involvement in 24 cases. Eighteen children were subjected to bronchoscopy. One child had a foreign body. Others showed inflammation and purulent secretions. Seven Bronchograms were done. All children were treated symptomatically. 29 (61%) children improved, 14 were status quo and 8 were lost for followup. One child underwent lobectomy. There were no deaths in the study group.

NEONATOLOGY

*NEO/01. COMPARATIVE STUDY OF INJECTABLE VERSUS ORAL VITAMIN K IN NEONATES

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100 full term normally delivered, exclusively breast fed, babies weighing more than 2.5 Kg were evaluated to determine the efficacy of various modes and doses of Vit K to prevent hemorrhagic disease of newborn. The babies were grouped into four categories of 25 each as follows: Group A - 1mg, intramuscular Vit (Menadione sodium disulphite) at birth; Group B - 0.5mg intramuscular Vit ; Group C - 1 mg orally Vit and group D babies received no Vit K. The prothrombin index was estimated in all babies between 36-72 hours of age. The results revealed a prothrombin index in Group A, B, C and D as 94.98 +(-) 7.64%, 95.08 +(-) 9.91%, 92.51 +(-) 10.10% and 80.39 +(-) 15.90% respectively. Analysis showed that the differences between groups A, B and C were insignificant. But in the group D prothrombin index was markedly reduced and was statistically significant ($p<0.001$) as compared with groups A, B and C. It is therefore concluded that oral Vit K is as effective as Injectable Vit K and therefore we recommend its usage in our country to reduce complications and costs of intramuscular Vit K injection.

*NEO/02. EFFECT OF INTRAVENOUS FLUIDS AND OXYTOCIN THERAPY DURING LABOUR ON UMBILICAL CORD SERUM SODIUM LEVEL

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Serum Sodium levels were determined in the cord blood of 100 newborns at birth. Estimation of maternal levels were also done before intravenous fluids and after delivery. The patients were subdivided into 3 groups.

The first group comprises of infants whose mothers were not transfused with intravenous fluids or oxytocin. The cord mean sodium levels showed no significant difference from maternal levels, suggesting that there is correlation between maternal and cord blood sodium and that maternal ECF changes are reflected in the fetus.

The second group comprises of infants whose mothers were transfused with intravenous fluids with or without oxytocin. There was statistically significant decline in the mean level of sodium, as compared to the control group, suggesting that intravenous fluids and oxytocin leads to hyponatremia.

Although Hyponatremia was seen in nearly 30% of the neonates there was no clinical symptoms attributable to hyponatremia,the occurrence of asymptomatic hyponatremia can be prevented by using 5% glucose saline as a vehicle for oxytocin instead of 5% glucose.

*NEO/03. COAGULATION PROFILE IN SEPTICEMIC NEONATES

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Coagulation profile was studied in 25 term neonates with apgar score of 7 or more at 1 minute with blood culture - proven septicemia. Observations were compared with that of 25 healthy, non-asphyxiated, term, birth weight and age matched controls. The study was conducted in the Neonatology Unit of Kalawati Saran Children's

Hospital. Detailed coagulation Test (Plasma Recalcification Time, Prothrombin Time, Kaolin Cephalin clotting time, Thrombin time & Fibrin degradation product levels) and platelet studies (platelet count, Platelet adhesiveness, Platelet aggregation to A.D.P., Platelet aggregation to collagen & platelet Factor-3, availability) were carried out in each of the 50 neonates by standard techniques. Hemostatic defects occurred in 96% of the septicemic neonates (& nil in the control group) irrespective of occurrence of clinical bleeding. The Coagulation tests were deranged in 80% & platelet function test in 92% of patients. These tests were significantly deranged in septicemia neonates as compared to the control group. Also, they were more significantly deranged in neonates with gram negative septicemia than in gram positive septicemic neonates. Early detection of coagulation disorders in neonates with clinical signs of septicemia before the appearance of Haemorrhagic manifestations may indicate the presence of the severity of septicemia and also provide a guide to appropriate management. In the present study, clinical bleeding occurred in 36% of patients in the study group. Significant correlation was observed between occurrence of bleeding and the reduction in Platelet aggregation to Adenosine-diphosphate, which was found in 75% of cased. This test may hence be used to predict occurrence of bleeding in septicemic neonates and improve prognosis by early intervention with frozen plasma or fresh whole blood.

***NEO/04. ROLE OF BACTERIOLOGICAL MONITORING FROM INANIMATE HOSPITAL ENVIRONMENT AND MEDICAL EQUIPMENTS IN AN INTENSIVE CARE NURSERY**

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The present study was aimed to evaluate the utility of performing routine monthly bacteriological surveillance from the inanimate nursery environment and six other neonatal intensive care unit (NICU) objects (viz. resuscitation equipments, baby placement sites, medications handled by nurses, formula feeds, cleansing solutions and miscellaneous items such as i.v. cannula etc) in relationship to endemic nosocomial infections occurring in the admitted babies over a period of 19 months. It is based on a retrospective review of records from neonatal division and microbiology laboratory from Jan. 1989 to July, 1990.

Significant bacterial colonization ($p<0.05$) was present at all the NICU inanimate items except the medications handled by nurses. On Discriminant analysis, however, only three NICU sites viz; baby placements, resuscitation equipments, and various cleansing solutions were found to be significantly contributing to nosocomial infections in the admitted neonates ($p<0.001$). Whereas resuscitation equipments were significantly colonized with Pseudomonas aeruginosa, Salmonella species, and Staphylococcus epidermidis; baby placement sites were colonized with Klebsiella aerogenes, E. coli species, and Staphylococcus epidermidis. Cleansing solutions, however, were colonized only with Pseudomonas aeruginosa.

The probability that a batch of newly admitted babies will acquire infection if all these three sites are colonized is 0.60. In the same way, the probability of not having any infected baby when these sites are not colonized is 0.90. On multiple logistic regression analysis, however, the relative risk of transmitting infection to babies from colonized site was maximum for baby placement sites (odd ratio = 7.48; $p<0.01$).

In striking contrast, pathogens present significantly in the inanimate NICU environment (viz.

floors, walls, sink-drains, furniture etc). did not contribute at all to nosocomial acquisition of infection in hospitalized newborns. Routine bacteriological surveillance from inanimate nursery environment therefore may not be justified. Instead a more frequent (every fortnight) bacteriological monitoring from medical equipments and cleansing solutions may be advisable as a part of infection control programme of NICU.

*NEO/05. A CLINICO-BIOCHEMICAL EVALUATION OF RENAL FUNCTIONS IN SEPTICEMIC NEONATES

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Fifty four septicemic term neonates admitted to NSCU, dept. of Pediatrics, G. M. & Associated Hospital, Lucknow with similar number of age and sex matched controls were evaluated for renal function parameters. The common clinical manifestations found were oliguria (51.8%), Anuria (1.85%), renal lump (1.85%), gross haematuria (12.2%), Pyuria (38.8%) and casts (55.5%). These neonates presented with mild to severe deterioration in their renal functions. The septicemic neonates were divided into Non oliguric septicemic group (NOSG n-26), functional oliguria septicemic group (FOSG n-28) and Ac. Renal failure group (ARF n- 29), on the basis of urine output and biochemical parameters.

Two phase evaluations in these groups were carried out at 3-5 days interval, and the renal function parameters were found to be highly significant ($p<0.001$), when comparison was made in NOSG, FOSG and controls in phase I and II. Serum pot (mean value 4.7, 5.46 meq/l), S.Creatinine (1.40, 2.12 mg/dl), Urinary sodium (0.8, 2.04 meg/kg/day) and urinary pot (0.35, 0.28 meq/kg/day) and Blood urea nitrogen (28.8, 50.02 meq/dl) were statistically significantly elevated both in NOSG and FOSG respectively in comparison to controls. These values were also significant in intergroup comparison. The rising values were associated with severity of renal functions deterioration. The serum sodium values were found to be not significant. GFR (25.14, 11.36 ml/min/1.75 m2) and FeNa (1.1, 4.56%) and RFI (0.74, 6.17) remained statistically significant respectively ($p<0.001$) in NOSG in comparison to FOSG.

Acute renal failure was diagnosed in 53.37% of cases out of 54 septicemic newborns, out of which 44.4% presented with oliguria and 9.25% were non oliguric. The mortality was much higher in ARF group as compared to Non ARF group, which was 21 and three respectively.

The bad prognosis can be predicted from gross hematuria proteinuria and granular, tubular casts in urinalysis and rising values of serum pot, creatinine BUN, high RFI and low GRF.

*NEO/06. SEPSIS SCREENING TESTS IN PRETERM BABIES: ARE THEY GESTATION DEPENDENT ?

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A battery of sepsis screening test are available for the diagnosis of neonatal sepsis. However, their efficacy has not been established in very low birth weight and preterm babies.

We have studied 91 babies born before 34 weeks of gestation in order to test the value of absolute neutrophil counts (ANC) micro-sedimentation rate (O ESR) and C-reactive protein (CRP) in the diagnosis of sepsis.

Twenty six babies had confirmed sepsis with bacterial cultures positive in blood or C.S.F. and/or histopathological evidence of sepsis after autopsy in fatal cases along with clinical suspicion of sepsis. Twenty two babies had clinical suspicion of sepsis but the bacterial cultures drew negative.

Forty-three non-septicemic patients were also studied. Amongst the confirmed sepsis group thirty four values in 25 patients out 26 showed neutropenia. (Standard Used: Zipursky et al 1976). Amongst no sepsis group 40 babies out of 43 showed neutropenia according to the above mentioned standards.

Micro sedimentation rate was raised in 23/26 babies with confirmed sepsis (Standard Used: Adler and Denton 1976). It was raised to 24/40 babies with no sepsis.

Qualitative C-reactive protein performed by latex agglutination in 21 cases of confirmed sepsis was positive only in 12. Amongst 32 non-septicemics it was positive in 2.

CRF was positive in only 3/7 babies with confirmed sepsis between the gestational age of 30-32 weeks and was positive in 1 out of 5 babies with confirmed sepsis below the gestational age of 30 weeks.

Considering these results it is proposed that conventional screening tests for sepsis are of low predictive value in preterm babies less than 34 weeks the reasons for these can be

i) An innate diminished capacity of such babies to mount hematological responses in the face of infection.

ii) The routinely used standards include babies born in wide range of gestation which may not be applicable to extremely premature babies.

*NEO/07. OUTCOME FOLLOWING BIRTH ASPHYXIA IN FULLTERM INFANTS - APGAR SCORES VERSUS ENCEPHALOPATHY

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In a prospective study of 6100 fullterm infants born at a large maternity hospital, the incidence of low Apgar scores at one and five minutes and the occurrence of Encephalopathy in the neonatal period was documented. All the babies who survived were followed up to the age of one year by regular home visiting and neurodevelopmental outcome assessed. This study was a part of UNICEF aided project ''Early Intervention with infants at risk for developmental disorders''.

Lower Apgar scores of 4 or less at one minute occurred in 170 infants (28/1000 term infants) and scores of 4 or less at 5 minutes in 92 infants (15/1000 term infants). However, clinical signs of Encephalopathy was seen only in 79 infants, an incidence of 12.9/1000 term infants. There was no correlation between low Apgar scores and occurrence of encephalopathy. Nearly 20% of infants with encephalopathy had normal Apgar scores. There were 18 deaths - ten among severe encephalopathy group and 8 among moderate group. No baby died of mild encephalopathy.

Follow up to the age of one year revealed that term infants who develop moderate and severe grades of Encephalopathy have a higher chance of significant neurodevelopmental sequelae. All infants who had low Apgar scores but did not develop encephalopathy were completely normal.

Our results support the contention that Apgar scores have a role only in determining the need for resuscitation at birth but gives little information as to how long the infant has been compromisedduring labour and delivery or in predicting the outcome. Statistical analysis revealed that Encephalopathy in the newborn period appear to predict the long term outcome better than low Apgar scores.

*NEO/08. OUTCOME OF LOW BIRTH WEIGHT BABIES AT VANI VILAS CHILDREN HOSPITAL

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By International agreement, a low birth weight baby is one with a birth weight less than 2500 gram, the measurement being taken preferably within the first hours of life, before significant postnatal weight loss occurs.

Traditionally, birth weight is regarded as one simple measure outcome of pregnancy. It is reliable indicator of foetal well being and maturity. It is also one of the simplest measurement that can be made with reasonable accuracy under different conditions throughout the world. Studies indicate that babies born with low birth weight have high mortality rate comparing to babies born with adequate birth weight. In India infants who weigh less than 2500 gram at birth represent about 30% of all live births.

Retrospective study of statistics of premature ward of Vani Vilas Children Hospital, Bangalore for the duration Jan 1990 to September 1990 revealed that 352 were admitted with low birth weight, out of which 69.60% were preterm babies and 30.39% were small for date babies. Sex ratio was 1.16 : 1 (M:F).

Incidence of different groups of low birth weight babies (according to weight recorded at the time of admission) as follows:

less than 750 grams	6.53%
750 - 1000 grams	11.07%
1000 - 1500 grams	43.18%
1500 - 2000 grams	27.84%
2000 - 2500 grams	11.38%

Out of 352 cases studied, 65.34% of babies were born at VVCH, Bangalore, 19.3% were at peripheral hospitals and 15.34% were home deliveries.

Follow up of these cases revealed that 12.21% of cases developed septicemia 16.76% of cases had birth asphyxia and 20.59% of cases had respiratory problems. Birth asphyxia and septicemia were seen mainly amongst babies delivered at home.

MORTALITY PROFILE AMONG LOW BIRTH WEIGHT BABIES IS AS FOLLOWS:

Percentage of cases showed significant improvement - 68.18 Percentage of cases died during hospital stay - 31.84

Mortality rate among different groups:

Weight (in grams)	Total%	Improved%	Died%
Less than 750	6.53	9.08	90.72
750 - 1000	11.07	53.33	46.33
1000 - 1500	43.18	73.68	26.31
1500 - 2000	27.84	85.57	14.48
2000 - 2500	11.36	92.5	7.5

Our study revealed that mortality rate was the highest among incredibly low birth weight (less than 750 grams) and lowest in group between 2000 to 2500 grams.

The incidence of low birth weight can be reduced

if pregnant women at high risk are identified and steps are taken to reduce the risk. It is clear from the multiplicity of risk factors that there is no universal solution. The main attention should be given to ways and means of preventing low birth weight through good prenatal care and intervention programs, rather than "Treatment" of low birth weight infants later.

*NEO/09. IMMUNOGLOBULIN PROFILE OF NEONATES

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A close correlation exists between the maternal transfer of immunoglobulins to fetus and incidence of Neonatal Septicemia. Prematurity and chronic placental insufficiency is liable to cause decreased immunoglobulin transfer to the fetus. Cord blood IgG levels of 31 infants born to mother with toxaemia of pregnancy and 9 infants born to normal mothers were studied.

The average IgG level in infants of toxaemic mothers was 773.33 mg. while it was 1051.23 mg. in controls the difference is statistically significant. IgG level in preterms born to mother with toxaemia of pregnancy was 718.06 mg. while it was 785.0 mg in controls. Average IgG level in TSGA of toxaemia mothers was 596.20 mg while it was 965.0 mg in control SGA, the difference statistically highly significant. IgG level was 1005.13 mg. in TAGA born to toxaemic mothers while it was 1403.71 mg. in controls. No significant difference was found in cord blood IgG in infants born to mothers with toxaemia of pregnancy and in controls at different stages of maturity in prematures. IgG level was 969.50 mg. in babies born to mother with mild toxaemia, while it was 720.80 mg. in those with severe toxaemia and 669.28 mg. in those with eclampsia. The difference in mild toxaemia, and severe toxaemia and eclampsia is statistically significant. IgG level was 1067.50 mg. in babies born to mother with toxaemia of less than one week while it was 610.80 mg. in babies born to mother with toxaemia of more than two weeks, the difference is statistically highly significant.

Various pathogenic mechanisms of alteration in IgG levels have been discussed.

*NEO/10. IMPACT OF PRACTICAL, LOW COST, INFECTION CONTROL MEASURES IN DECREASING NOSOCOMIAL INFECTIONS IN THE NICU

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Based on a 13 year Surveillance in our neonatal intensive care unit (NICU), premature care unit (PCU) and newborn nursery (NBN), the impact of simple, practical, low cost infection control measures on nosocomial infections (NCI) was evaluated. In 1977, 41.1% of the babies had at least one NCI, which declined to 2.9% in 1989 ass a result of these measures. Gastroenteritis reduced to 0.3% in 1989 from 24.8% in 1977 following the stoppage of bottle and formula feeds and introduction of exclusive breast milk feeds to all newborns. Pyoderma decreased (8.3% in 1977 to 0.6% in 1989) after the adoption of the "no-bath technique". The risk of NCI was associated with longer stay > 10 days, I.V. fluids, endotracheal intubation, prematurity and birth weight <1.5 kg, multiple investigations, respirator use and incubator use. Proper hand washing and drying facilities, introduction of conservative care, use of disposables, establishment of an infection control committee and health education of resident staff, nursing staff,

class III & IV workers, and patients and their relatives are among the most important of the measures responsible for reducing the incidence of septicaemia (10% in 1977 to 1.4% in 1989), pyogenic meningitis (3% in 1977 to 0.7% in 1989), pyogenic meningitis (3% in 1977 to 0.7% in 1989) and I.V. infection (11% in 1977 to 0.5% in 1989). In conclusion, simple, practical, low cost infection control measures (as outlined in the study) are highly effective in reducing NCI rates and improve the survival of high risk newborns requiring intensive care.

NEO/11. CORD BLOOD IgM and IgA LEVELS - IN TERM BABIES

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This is a study, done at Government General Hospital attached to M. R. Medical College, Gulbarga.

Umbilical vein blood was collected from 40 babies delivered at term. Serum was separated, stored in deep freeze with sodium azide as preservative. IgG, IgM and IgA levels in the sera were estimated with SRID (single Radial immuno diffusion) technique of mancini et all using GOLUGEN Immunoglobulin plates of Immunodiagnostics, New Delhi.

There were 18 female and 22 males babies, seventeen were SGA (small for gestational age) babies and 23 were AGA babies. None of them had clinical features suggestive of intra uterine infection like - Hepatosplenomegaly, Eye, Cardiac, or other abnormalities, petechiae, icterus etc. VDRL done in many of the mothers of these babies were negative. Serological or others studies to prove TORCH-S infection were not done.

Gestational Age in weeks	No.of TERM SGA Babies (F + M)	Birth Wt. in gm. mean +(-) sd
38	5 (3+2)	2300 +(-) 100
39	5 (2+3)	2400 +(-) 200
40	7 (4+3)	2500 +(-) 100

Immunoglobulin levels in mgs/dl (mean +(-) sd

IgG	IgA	IgM
840 +(-) 140	30 +(-) 1 2/5	40 +(-) 10 2/5
840 +(-) 160	30 +(-) 10 4/5	-
1100 +(-) 300	40 +(-) 20 3/7	50 +(-) 20 6/7

IgG, IgM and IgA levels in 17 Term SGA babies

Gestational Age in weeks	No.of TERM AGA babies (F+M)	Birth Wt. in gms. mean +(-) sd.
38	6 (2+4)	2800 +(-) 200
39	11 (5+6)	3000 +(-) 200
40	6 (2+4)	3200 +(-) 200

Immunoglobulin levels in Mgs/dl mean +(-) sd.

IgG	IgA	IgM
800 +(-) 200	--	--
1000 +(-) 500	30mg/dl in one baby only.	--
1100 +(-) 400	30 mg/dl in one baby only.	--

Most of the term SGA babies had IgM levels 40 + 20 mg/dl (considered significant, to diagnose IU infection) where as in term AGA babies IGM and IgA levels were detected in only 10% (IgA 30 mg/dl) and IgM in none.

This study indicates very high incidence of IU infection (raised IgM and IgA, being taken as its evidence) in SGA babies. These babies may not show the classical feature of TORCH-S IU infection. It may even be that other IU infection without any characteristic clinical picture, may be more common in this area.

This study encourages further studies of larger population of term SGA and AGA babies and detailed investigation like Serological tests of TORCH-S infection, to understand the Epidemiology of these IU infection and prevention of these and hence the birth of SGA babies.

NEO/12. STUDY OF CONGENITAL GASTROINTESTINAL MALFORMATIONS IN NEONATES AT J.J.M. MEDICAL COLLEGE ATTACHED HOSPITALS, DAVANGERE

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Study of neonates admitted to Neonatology and pediatric surgical wards in J.J.M.Medical College attached hospital from April 1989 to March 1990, was done to evaluate the incidence, pattern and clinical manifestations of congenital anomalies of gastrointestinal tract.

The incidence was found to be 4.06 per 1000 and of the 50 neonates found with gastrointestinal tract malformations M:F ratio was 5:4. It was observed that congenital gastrointestinal malformations constitute a sizeable proportion of neonatal emergencies.

Of all, 46% were anorectal anomalies, with sex predilection of M:F 3:1 in high anorectal malformations. Among others 10% oesophageal atresia, 2% duodenal atresia, 6% ileal atresia, 4% volvulus, 6% meconium plug syndrome, 2% colonic atresia, 2% persistent vitellointestinal duct, 12% hirchsprung's disease, 6% abdominal wall defects and 2% diaphragmatic hernia.

Out of 50, 39 were subjected for surgery and 11 were managed conservatively as the latter cases were not fit for surgery. 28 neonates (56%) who underwent surgery recovered postoperatively were discharged. 11(22%) died post-operatively due to septicemia, pulmonary insufficiency.

In conclusion we recommend collaborative care provided by the neonatologists, pediatricians, anesthetists and pediatric surgeons for these patients for a favorable outcome. Proper parental counselling of malformed babies pointing to genetic transmissions will be helpful in reducing the incidence of congenital malformations.

NEO/13. ETIOLOGICAL ROLE OF MATERNAL MALARIA IN CAUSATION OF LOW BIRTH WEIGHT OF NEWBORNS

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Malaria is widely prevalent in India and pregnant women are more susceptible to it than general population. Maternal malaria can result in anemia, hypoglycemia and malnutrition and also cause various placental changes resulting in decreased birth weight of neonates born to them.

The present study was conducted on 75 consecutive mothers who gave birth to babies weighing < 2.5 Kg. (LBW) in the hospital after excluding those mothers who suffered from hypertension, pregnancy associated hypertension, diabetes, Rh

Incompatibility or chronic disease of kidney, heart and liver and tuberculosis. All of them belonged to low socio economic group and had taken antenatal care. None of the babies had congenital anomalies. Indirect fluorescent antibody test using IgG antibodies (IFA-IgG) and plasmodium knowlesi antigen was done on the sera of all the mothers at the time of delivery. IFA reading of > 1:16 was considered as a positive test. Neonates were weighed and examined within 12 hours of birth.

It was found that 6 out of 75 or 8% of women who delivered LBW babies were seropositive for malaria. Half of seropositive mothers delivered before 37 weeks of gestation (preterm) when compared with 38% of seronegative ones. The mean birth weight of preterm neonates born to seronegative mother was 1920 gms. and to seropositive ones was 1700 gms. The difference was statistically significant. Mean weight of term babies born to seronegative women was 2100 gms. and to seropositive ones 1900 gms. and this difference was also statistically significant.

It was concluded that maternal malaria may be an important preventable cause of LBW babies in our country.

NEO/14. SEPTICEMIA IN NEWBORN A CLINICO BACTERIOLOGICAL STUDY

Lalitha Bahl, Sanjeev Chaudhary, Asha Goel

One hundred neonates with clinically suspected septicemia were included in the present study undertaken in department of Pediatrics, IG Medical College, Shimla from April 1988 to March 1989, to study the incidence of septicemia and clinico-bacteriological profile of this disease in this hilly terrain as no such study has been undertaken in this part of the country. Only neonates upto the age of 28 days were studied. The incidence of septicemia as documented by positive blood culture was 22% of total admission to neonatal care unit at IG Medical College, Shimla whereas incidence among the neonates born at K. N. Hospital was 17.3/1000 live birth for the period of study from April 88 to March 89. Maximum incidence of septicemia was observed during first week of post natal life (61.3%). Males (68.1%) were found to be more prone to suffer from septicemia as compared to females. Important perinatal adverse factors associated with neonatal septicemia as observed in this study were low birth weight (65.9%), prolonged rupture (38.6%) of foetal membranes, birth asphyxia (20.4%) and prolonged labour (18%). Majority of neonates with septicemia presented with refusal to feeds 79.5%, lethargy 72.9% temperature instability 36.3% and abdominal symptoms like vomiting, diarrhoea and abdominal distension and respiratory distress. Majority of septicemia neonates had sluggish neonatal reflexes (75.1%) Hypothermia 40.4% respiratory distress (22.7%) and jaundice in 43.2% as clinical sign. Pneumonia, diarrhoea and meningitis were found as important associated illnesses in cases of neonatal septicemia in 27.2%, 25% and 15.9% of cases.

Blood culture positivity rate in the present study was 44%. In our neonatal unit majority of cases (72.3%) of neonatal septicemia were caused by Gram negative organisms like Klebsiella Pneumoniae (31.9%), Escherichia coli (27.3%) and pseudomonas aeroginosa (6.7%). Gram positive septicemia in majority of cases was caused by staphylococcus aureus (20.5%).

Gram negative septicemia is more common in the preterm infants (70.3%); among babies with lower weight (75.7%) and in majority (80%) of hospital born babies. Klebsiella, Escherichia oli and Pseudomonas are responsible for septicemia in majority of infants belonging to these categories. Early onset disease is also caused by Gram negative organisms in majority (82.7%) of cases and Escher coli (38.4%) is the major

pathogen found in cases of septicemia during first 48 hour of postnatal life.'

76.5% & 91.4% of both Gram negative as well as Gram positive organisms respectively were found sensitive to Gentamicin and Amikacin respectively, 44.6% of all the bacterial isolates were also sensitive to Cefazolin. 85.2% and 72.4% of all the organisms were resistant to Ampicillin and Penicillin respectively. In view of these finding, the drugs of choice for initial therapy in neonatal septicemia should be a combination of Gentamicin with a first generation cephalosporin like Cefazolin. This combination will cover most of the causative organisms of neonatal septicemia in our neonatal care unit.

NEO/15. PONDERAL INDEX AS A PREDICTOR OF POSTNATAL GROWTH MORBIDITY & MORTALITY IN PREMATURE BABIES

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Eight preterm infants admitted to the neonatal wards of Vanivilas Children Hospital, Bangalore Medical College, Bangalore were included for the study. Ponderal index was calculated for all these babies to study its prognostic significance with respect to growth rate, morbidity and mortality.

Seventy five babies were proportionate, and five were disproportionate. Proportionate babies had a weight gain of 1.9 +(-) 0.16 Kg (Mean +(-) SD) and 1.9 +(-) 0.21 Kg in the first and the second three months respectively. Disproportionate babies had a weight gain of 1.8 +(-) 0.09 in the first 3 months and 1.65 +(-) .05 Kg in the second 3 months.

The difference in this weight gain both in the 1st quarter and 2nd quarter among the two types of babies was not significant.

The ponderal index was also not useful in predicting the mortality and overall morbidity calculated for proportionate babies. However the occurrence of fatal illnesses was found to be significantly higher in babies whose ponderal index was less than 2 (P value <.01). So, it was concluded that the ponderal index is not very useful in the premature babies as a prognostic indicator for weight gain, mortality and overall morbidity, but is useful in predicting fatal illnesses.

NEO/16. A COMPARATIVE STUDY OF PERINATAL OUTCOME AND LABOUR PATTERN IN PRETERM BREECH V/S PRETERM VERTEX

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The study was carried out in the Department of Pediatrics, Kalawati Saran Children's Hospital and Obstetrics and Gynecology, SSK Hospital, Lady Hardinge Medical College, New Delhi. One hundred cases of Preterm Vertex and 40 cases of Preterm (PT) Breech were selected from those antenatal mothers admitted to the labour room of SSKH from July 1989 to Jan 1990. The first day of LMP was the method used to calculate premature gestation antenatally and modified Dubowitz criteria to confirm it postnatally. The cases were considered preterm if the period of gestation was less than 37 complete weeks. Only singleton pregnancies were included in the study. The two groups i.e. PT Vertex (Vx) and PT Breech (B) were matched for maternal age, parity and socioeconomic status. The various antenatal factors like young

maternal age, primiparity, lack of antenatal care, and history of previous perinatal wastage were among the important common predisposing factors in premature deliveries in both the groups. Threatened abortion, APH, PIH (pregnancy induced hypertension) hydramnios, maternal undernutrition, anaemia and infection contributed equally to prematurity in both groups. All intrapartum complications like cord prolapse (Vx 2%, B 7.5%), fetal distress (Vx 3%, B 10%), prolonged labour (Vx 3%, B 15%); Congenital malformations (Vx 4%, B 12%) and birth trauma (Vx nil, B 7.5%) were significantly more often associated with preterm breech deliveries. Abdominal delivery (Caesarian section) produced better perinatal outcome than vaginal delivery in terms of decreased perinatal morbidity and mortality in all preterm groups. This difference was more pronounced in the preterm breech cases (PNM, abdl deliv 17% vg 59%) as compared to the PT vertex (abdl 23.5%, vg 41%). Hence abdominal delivery should be advocated for PT Breech cases on a primary basis whenever level II to III neonatal care is available. However, interestingly the perinatal mortality in PT Breech delivered abdominally was better than the PT Vertex born by Caesarian section (PNM of 17% in B as against 23.5% in Vx) in our study. It may be hypothesized that earlier interventions (ie abdl deliv) were carried out in PT Breech as compared to PT vertex due to bias that birth asphyxia/fatal distress are more likely to occur in the Preterm Breech cases.

NEO/17. FACIAL MORPHOMETRIC MEASUREMENTS - A RANGE OF NORMALS IN NEWBORNS

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Syndrome identification forms an important field in Medicine for proper genetic counselling. Diagnosis of many syndromes depends on clinical observation of abnormal body parts, proportions and unusual features. Clinical impression of unusual body proportions may sometimes be misleading; hence requires quantitative criterion. Very few studies in India have tried to establish norms for morphometric measurements.

In the present study 817 full term and preterm Newborns (range 26-42 weeks) were subjected for various facial morhometric measurements by standard measurement techniques. The measurements recorded included outer canthal distance, inner canthal distance interpupillary distance length of filtrum, mouth width, ear length and Ear breadth. The gestational age was assessed by Dubowitz Criteria. Normal values were determined by plotting the mean +(-) 2 SDs for each gestational week Vs gestational age. Tables, graphs showing means and standard deviations of facial measurements are prepared which we hope will help as reference standards for newborns in South India.

NEO/18. LIMB STANDARDS IN NEWBORNS

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Normal Standard for Morphometric measurements of limbs are essential for early identification of many syndromes in the neonatal period.

817 full term and preterm babies were subjected for various limb measurements by standard techniques. The measurements recorded included total hand length, hand breadth, palm ength, middle finger length, foot length and foot breadth. Gestational age was assessed by Dubowitz Criteria. Normal values were measured by plotting the mean +(-) 2SDs for each

gestational week Vs gestational age. Tables and graphs of means and standard deviations are prepared which we hope may serve as reference material for South Indian Newborns.

NEO/19. LASER BEAM ACUPUNCTURE THERAPY FOR STIMULATING SUCKING REFLEX IN HIGH RISK NEONATES

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It is the experience of all neonatologists that some babies exhibit undue laziness in sucking particularly when gavage feeding has been required for long. Sucking at a dummy has been advocated when oral feeding is not possible for long. The objective of the present study was to assess the scope of HELIUM LASER BEAM ACUPUNCTURE to stimulate sucking reflex in the newborns. To date only one study has been reported in chinese literature by Chian Wai Xin in 1974 using 1-1/2" long and 28 gauge needles. Helium neon laser beam was used by us as it is painless.

Twenty babies, 3 full term and 17 preterm admitted to NICU for prematurity, respiratory distress syndrome, birth asphyxia, meconium aspiration, IDM and Downs syndrome were subjected to acupuncture therapy after 34 weeks of gestation after all the cause for laziness were ruled out. The machine used was a German model manufactured by AKUMED. Each of the patient was exposed to helium neon laser beam for 10 seconds at 600 Hz. The acupuncture points used were along the course of the stomach meridian and on the face bilaterally.

Sucking commenced after the first sitting in 8 babies, seven babies required 2 and 5 required 3 sittings. Total number of sittings required were 1, 2, 3, 4, 7, 8, and 10 by 4, 6, 5, 2, 1 and 1 babies respectively. Last was a severely asphyxiated baby. Acupuncture is satisfactory because it is non-penetrating, painless, drugless and safe therapy.

NEO/20. MORTALITY AND MORBIDITY AMONG TWIN NEONATES IN A RURAL TEACHING HOSPITAL

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Over a period of 44 months (Jan 1987-Aug 1990) 189 twin neonates were admitted to the neonatal service of Kasturba Hospital. The computerized case records of these infants were analyzed to assess morbidity and mortality in the early neonatal period and results were compared with singletons admitted during the same period.

Table: Mortality and Morbidity in twins and singletons

	TWINS (n=189)		SINGLETONS (n=4998)		P value
	No.	%	No.	%	
A.Deaths	49	25.9	178	3.6	<.001
B.Morbidity					
Preterms (<37 wk)	105	55.6	1055	21.1	<.001
LBW (<2500 gms)	161	85.2	1555	31.1	<.001
SGA	83	43.9	644	12.9	<.001
Birth asphyxia	11	5.8	161	3.2	NS
HMD	10	5.3	73	1.5	<.001
Septicemia	18	9.5	168	3.4	<.01
Hyperbili-	44	23.3	1301	26.0	NS
Hypoglycemia	9	4.8	91	1.8	NS
Convulsions	4	2.1	49	2.0	NS

In our experience, birth asphyxia, hyperbilirubinemia, hypoglycemia and convulsions did not vary significantly among singleton and twin neonates.

NEO/21. COAGULASE NEGATIVE STAPHYLOCOCCAL SEPTICEMIA IN NEWBORNS

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Coagulase-negative staphylococci (C-NS) recently have been identified as common cause of sepsis in high risk newborns. This study reports our experience with septicemia caused by C-NS during a one and a half year period in a neonatal intensive care unit (NICU).

The charts of all the newborn infants in the NICU from January, 1989, through July, 1990, with positive blood cultures for C-NS were evaluated. During this time, 2177 infants were admitted to the NICU.

74 (3.39%) neonates yielded C-NS in blood cultures during the study period. Of these, 58 (2.66%) infants had clinical and hematological features compatible with the diagnosis of septicemia. Remaining 16 babies with positive cultures had no evidence of sepsis, and were designated as "C-NS bacteremia".

The age at which the positive blood cultures were obtained differed between the bacteremic and septicemic group. In bacteremic group, onset occurred between 1-4 days of age. In contrast, in septicemic group, the range was 6-20 days, with a mean of 10.22 (+(-) 3.53) days. Further analysis was subjected to only group with designation of C-NS sepsis.

More than two third of the total cases of C-NS sepsis were premature and LBW. Apart from prematurity and LBW, other high risk perinatal factors (birth asphyxia, MAS and PROM were present in 68.9% of the 58 neonates with C-NS sepsis. Prominent clinical features included lethargy, poor feeding and fever. Besides this apneic spells were seen predominantly in babies weighing less than 1500 grams.

Before the diagnosis of C-NS sepsis, more than half of the neonates had received prolonged (more than 7 days) intravenous fluid therapy, a quarter had undergone umbilical catheterization and a further quarter needed a ventilator support.

Overall mortality in C-NS sepsis was 17.24%, distinctly higher in neonates with RDS and those requiring mechanical ventilation ($p<0.05$). Only 1.34% C-NS isolates were resistant to all routinely used antibiotics and sensitivity was maximum with newer antibiotics (90-100%) (Ceftriaxone, Cefuroxime, Ciproflox, Amikacin) followed by cloxacillin, gentamicin and cephexin (60-80%).

In conclusion, recovery of C-NS from blood culture of a newborn infant with signs of sepsis should not be considered a contaminant. The newborn infant, especially the premature and LBW neonates with relatively longer hospital stay and excessive exposure to diagnostic and supportive procedures should be added to the list of high risk patients for septicemia with C-NS.

NEO/22. BRAINSTEM EVOKED RESPONSES AUDIOMETRY IN HIGH RISK NEONATES

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A study of 25 high risk neonates, including hyperbilirubinemia,asphyxia neonatorum, pyogenic meningitis, intrauterine infection and prematurity as risk factors, was performed at 1

to 6 months of age with special reference to the incidence of hearing loss and the effects of high risk factors on the wave patterns of BAEP.

Analysis of the results revealed that the overall incidence of significant hearing loss in the high risk population was 28%. there was no difference in the incidence between males and females. In the hyperbilirubinemia group, higher levels of serum bilirubin, clinical evidence of kernicterus, exchange transfusions and coexistent prematurity were associated with a higher incidence of hearing loss.

No statistically significant difference in wave patterns or inter-peak latencies was found amongst the asphyxiated infants. A reversal of V:I ratio to greater than 1 due to the smaller amplitude of wave I, as a result of asphyxia was also noted. BAEP was found to prognosticate the future neuro-developmental outcome to a certain extent. The single case of intrauterine infection studied had severe peripheral hearing deficit, while infants who had suffered from pyogenic meningitis had no significant hearing loss. The effect of the use of ototoxic drugs could not be studied separately, since all the infants in the present study, who had received ototoxic antibiotics, also had added risk factors. However there was no significant correlation between the duration of their use and the incidence of hearing loss.

The higher incidence of hearing loss in high risk neonates and the efficacy of BERA as a screening procedure for the detection of the same as reported in literature is corroborated in the present study.

NEO/23. NEONATAL SEPTICAEMIA - SOUTHERN ORISSA ANALYSIS OF 244 CASES

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Retrospective analysis of two hundred and forty four cases of neonatal septicaemia of the age group of one to twenty eight days was done from July 1987 to 30th June 1990, in the Dept. of Pediatrics, M.K.C.G. Medical College, Berhampur (Gm), Orissa. Male predominated over female neonates.

Majority of cases (41.8%) were of age group 4 - 10 days. Eighty two percent were from the rural areas and low socio-economic status. Seventy seven percent weighed less than 2500 gms.

Mode of presentations were refusal to take food, vomiting, hypothermia, convulsion, pallor, respiratory distress. Thirty one per cent had umbilical sepsis.

all had C.R.P. positive except eleven cases. T.L.C. <5000/cumm. (68%), rectal temperature <32 C (58%), Hb ranged from 6 gm% to 11 gm%, X-ray chest PA View positive in 92/122 and C.S.F. +ve for pyogenic meningitis in 78/111. Blood culture +ve in 44/100, majority of isolates were negative microbes E.Coli 22, Kleb 9, Pseudomonas 3, and Gm positive, Staph.aureus coagulase negative 10, urine culture +ve 12/42, amongst which multiple growth in 5, single growth like E.Coli 3, Kleb. 2, proteus 1 and Pseud. 1.

Out of 244, 97 died. Maximum death in the age group of 0-3 days (56%) and the least 11-20 days (33%).

Sensitivity of microbes and modalities of treatment were discussed.

NEO/24. INFLUENCE OF VARIOUS FACTORS ON THE LENGTH OF THE UMBILICAL CORD

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1316 consecutively born babies in the Neonatal unit of Department of Paediatrics in Mahatma Gandhi Institute of Medical Sciences, Sewagram, were studied. 467 (35.49%) babies were low birth weight (LBW) babies (Birth weight <2500 g.). Length of umbilical cord was measured in all the babies. Umbilical cord < 40 cms (16 inches) was considered as a short umbilical cord. Out of 1316 total babies 286 (21.74%) had short umbilical cords. 132 (46.15%) male babies and 154 (53.85%) female babies had short umbilical cords. This difference was not significant statistically. 140 babies (48.95%) out of 286 babies with short umbilical cord were LBW babies.

It was also observed that cord length was directly proportional to the socioeconomic status of the mother. There was significantly increased incidence of short umbilical cords in babies born to mothers belonging to lower socioeconomic class (Kuppuswami SES Scale 1976). The incidence of short cords was 0.00%, 02.79%, 09.09%, 53.49% and 34.96% in SES Scale. I, II, III, IV, V respectively. We could not show any influence of gestational age on the length of umbilical cord.

Thus female babies, LBW babies born to mothers of low SES had shorter umbilical cords.

NEO/25. CHLOROPHENOTHANE (DDT) LEVELS IN MOTHER'S MILK AND BLOOD, AND IN CORD BLOOD

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Residues of DDT (Dichloro diphenyl trichloro ethane) are known to be persistent in human body. In view of their long persistence, lipophilicity and potential carcinogenicity, the use of DDT has been restricted or totally banned in most of the developed countries. In India and other developing countries DDT continues to be used extensively as an insecticide. In view of this the present study was undertaken to find out levels of DDT and its residues in maternal blood cord blood and breast milk from mothers and their neonate from different parts of Delhi. Serum was separated from the blood samples, extracted in hexane and the concentrate was injected into a gas liquid chromatography (GLC) for quantitative and qualitative analysis. Milk samples were lyophilized, extracted in hexane in a soxhlet apparatus, the extract concentrated and cleaned up by column chromatography and analyzed by GLC.

analysis of samples of DDT revealed the presence of metabolites of DDT in all samples of maternal blood, breast mil and in 90% of the cord blood samples. The mean levels of total DDT in maternal blood, cord blood and breast milk were 0.1535 gm/1, 0.1311 mg/1 and 0.45 ppm respectively. The predominant metabolite in the blood samples was 1, 1-Dichloro-2, 2 bis (p-chloro-phenyl) ethane (p,p'-DDD). Its level in Maternal blood was 0.064 mg/1, & in cord blood was 0.049 mg/1. the predominant metabolite in breast milk was p,p'-DDE-0.214 ppm.

There was not definite correlation between the levels in maternal/ cord blood and maternal blood/breast milk. The DDE/DDT ratio for maternal blood, cord blood and breast milk was 5.5, 3.9 and 10.8 respectively. The average daily intake of a new born was calculated to be 15 times the acceptable daily intake (ADI) recommended by WHO. (range 2 times the ADI to 80 times)

NEO/26. NEONATAL OUTCOME OF VERY LOW BIRTH WEIGHT BABIES

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Inspite of improvements in the perinatal and neonatal care, the neonatal mortality in our country has not decreased especially in very low birth weight babies. A study of all VLBW babies born during the year 1989 in Sir Ganga Ram Hospital was undertaken to evaluate their immediate outcome. These accounted for 3.1% of all live births and 53% of all neonatal deaths. The overall neonatal mortality rate in our study was 11.49 per thousand live births. Most of the VLBW babies were born after spontaneous premature labour (n-32, 37.6%) whereas placental abruption (n=4, 4.7%), pregnancy induced hypertension (n=16, 18.8%), premature rupture of membranes (n=22, 25.8%), idiopathic IUGR (n=11, 12.9%) accounted for the rest. The mode of delivery did not correlate with the neonatal outcome once the gestation and the birth weight was taken into account. 83% of the deaths in VLBW babies were in first 7 days of life. 76% of early neonatal deaths were due to intrapartum anoxia with or without trauma and pulmonary immaturity and its consequences like intraventricular or pulmonary haemorrhage. Most of the severely malformed babies born before 32 weeks of gestation were still born. Lethal congenital malformations contributed 18% of all neonatal deaths. Sepsis was the most common cause of late neonatal death and we had documented cases of bronchopulmonary dysplasia secondary to ventilatory support, in babies with severe HMD who died.

NEO/27. POLYCYTHEMIA IN THE NEWBORNS

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103 newborns whose umbilical cord were clamped within 30 seconds with baby at level of introitus were studied. Interval between birth and cord clamping was recorded. Hematocrit and Hb cord blood and venous samples at 2 hours and 12 hours was performed. Babies were followed for symptoms till discharge. Mean Hct and Hb values were highest at 2 hours in all infants. Levels remain higher than cord blood at 12 hours in FT AGA & SGA babies. Preterm babies do not show a fall till 12 hours. Mean values of Hct 45.9%, 52.5% and 48.8% for all babies at birth, 2 hours and 12 hours respectively. Corresponding figures for preterm babies were 42.2%, 47.6% and 47.4% respectively. Hb values follow the same pattern as the hematocrit.

Birth weight, sex, complications of pregnancies and time of cord clamping did not influence the Hct & Hb significantly.

6 full term infants, 3 AGA & 3 SGA were polycythemic (Hct > 65%) at 2 hours and only one at 12 hours. Only these six had cord blood Hct > 55%, 4 looked plethoric and one developed jaundice.

Cord Blood Hct > 55% can be used as an indicator of impending polycythemia in the first day of life.

NEO/28. CONGENITAL MALARIA - A RARITY ? REQUIRES TO BE REVIEWED

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Despite its endemicity and it being a distinct clinical entity in newborns, congenital malaria remains an under reported condition. The present study includes forty-nine cases of congenital malaria in neonates seen in the neonatal unit, Department of Pediatrics, Medical College Baroda between April to September 1990.

The diagnosis of congenital malaria was suspected clinically and confirmed by blood films (thick and thin smears). None of the neonates had received prior blood transfusion. All the newborns were less than 7 days old at the time of presentation. Most common age of presentation was second day (38.77%) and third day (32.65%) of life. Most common clinical features were fever (69.38%), weight loss (34.69%), H/o fever in mother (42.85%), neonatal hyperbilirubinemia (44.9%), anemia (48.9%), splenomegaly (32.65%) and feeding difficulty (26.53%). Other causes of neonatal jaundice were excluded in all the babies. 4 babies (8.16%) also had associated septicemia. 37 babies (65.5%) were appropriate for date.

Blood films revealed P. falciparum in 47 (95.9%) and P. vivax in 2 cases (4.08%). 46 babies responded to oral chloroquine that was given in all babies. Repeat peripheral smear 7 days after oral chloroquine was started was positive in only three cases. All the three responded to oral quinine. 2 babies died due to associated illness.

It is concluded that congenital malaria is not a rarity. Most patients present on second or third day and most respond to early treatment with oral chloroquine.

NEO/29. A STUDY OF ASPHYXIA NEONATORUM IN EMERGENCY PREMATURE WARD AT VANI VILAS CHILDREN HOSPITAL, BANGALORE

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"Breathing is living" - most infants begin to breath spontaneously within a few seconds of birth as a result of exposure to the external environment. In all cases of delayed initiation of respiration beyond a minute after delivery and also where breathing is unsatisfactory after birth, resuscitative measures are imperative to save life and to prevent irreparable brain damage from asphyxia.

Asphyxia neonatorum has been defined by the WHO as a combination of hypercapnia, hypoxia and acidosis. Total number of cases in this study was 164. Sex ratio shows a male predominance, affected male children constituted 60.80% and females 37.19%.

The birth weight of majority of cases was in a range of 2 to 2.4 Kgs.

Maternal study of PET was noted in 19.5% of cases.

Mode of delivery was normal vaginal deliveries constituting 84.5% of total cases. Breach deliveries in 7% of cases. LSCS constituted 8.5% only.

Place of birth in majority of cases was at VVCH (56.1). Home deliveries constituted 8% of the cases. Deliveries at peripheral centres constituted 35.9%.

Total number of deaths in this study group was 46 (28.04%). Percentage of deaths in babies born at VVCH was 36% and outside deliveries 52% and home deliveries 12%.

NEO/30. CORD PROBLEMS AND NEONATAL OUTCOME : A PROSPECTIVE STUDY

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A prospective study was undertaken in consecutive births to study the incidence of cord problems and neonatal morbidity and mortality.

A total of 258 babies were delivered with either cord round neck (80.7%), true knots (3.8%), cord prolapse (12.36%) and other miscellaneous conditions. Among 80.7% of births with cord round the neck in 20% of babies there were two or more loops of nuchal cord. No association was noted with antenatal care, presentation or maternal parity. Majority births were vertex presentation, breech, compound presentation and transverse lie were noted in 7.30%, 2.14% and 1.54% of cases respectively. Birth asphyxia (A/S < 6 at 1 min) was recorded in 20.52% of these babies and 21.7% of births were caesarean section.

A total of 19 perinatal deaths were noted, 15 being still births and 4 neonatal deaths. Perinatal mortality rate was 73.6/1000 births. Mean neonatal birth weight was 2.600 kg. Main neonatal problems encountered were septicemia, aspiration syndrome, hypoxic ischemic encephalopathy, Hyperbilirubinemia and neonatal convulsions in 4.56%, 13.48%, 4.56%, 5.32% and % of babies respectively.

In 58 neonates, cord blood hemoglobin was done to find out incidence of anemia with tight or loose cord round neck. In 38 babies when cord round neck was loose mean Hb was 16.32 +(-) 1.7 gm/dl in 20 nuchal cord was tight and mean Hb was 16.58 +(-) 2.11 gm/dl, the differences were not statistically significant. However in 7 neonates Hb was below 12 gm/dl necessitating exchange transfusion.

NEO/31. BLOOD GLUCOSE PATTERN IN TERM NEWBORNS

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Blood glucose levels varies in TAGA & TSGA babies. The later group is prone to hypoglycemia in newborn period, hence the study of 75 newborns 50 TAGA & 25 TSGA was done to analyze their blood glucose pattern at birth, 2 hrs, 24 hrs & 36 hrs.

Mean blood glucose in TAGA was 72.25 mg%, 49.50 mg%, 54.00 mg% and 58.75 mg% in males and 73.83, 53.16, 56.50, 63.33 mg% in females at birth 2 hrs, 24 hrs and 36 hrs respectively. While it was 56.50, 37.00, 44.00 & 48.00 mg% in males & 56.33, 40.00, 42.66 & 47.00 mg% in females at birth, 2 hrs, 24 hrs & 36 hrs respectively in TSGA. The difference is highly significant.

In India 87% of all LBW newborns are TSGA of these 94% are between 2-2.5 kg weight. 20% of this group has lowest blood glucose level 30 mg% between birth and 36 hrs. which is very near the cut off point, although none showed symptomatic hypoglycemia. So they should be considered at risk of developing symptomatic hypoglycemia as 20% touched the level of symptomatic hypoglycemia i.e. 30 mg% for TAGA babies. So they needs a close observation in newborn period for symptoms of hypoglycemia to prevent any neurological damage.

NEO/32. MATERNAL DETERMINANTS AND BIRTH WEIGHT

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A retrospective analysis of 287 Singleton new born babies born to mothers of ages between 20 to 36 years attending the well baby clinic of Vani Vilas Children Hospital, Bangalore Medical College, Bangalore forms the subject matter of this study. The data analysis was done by using a Computer (P.C.). The correlation

between the babies birth weight with maternal anthropometry (weight and height) and Gestational period was worked out by finding the 'r' values by using one independent variable regression analysis and the significance of levels of 'r' was found out by 't' and z test. The correlation of birth weight to maternal educational status was worked out by using Chi-square test. Birth weight, was found to have a strong positive correlation to the maternal anthropometric measurements and gestational period (Significance level $p<0.0000$) and a highly significant association to maternal education (significance level $p < 0.0000$).

A unit increase of birth weight with a unit increase of the other maternal quantitative variables was also worked out by using the least square regression equation A + (B x) and it was found to be 18 gms, 26 gms and 37.3 gms for maternal height (1cm), weight (1kg) and gestational period (1 week) respectively.

It was concluded that as all the maternal determinants were found to be strongly related to birth weight, any one among these which can be easily measured can be employed for field studies for predicting the birth weight. A measuring tape calibrated with different colours (as in Shakir's tape for measuring MAC in children) can be used by an uneducated health worker.

The practical applicability of easy methods of predicting the birthweight and its usefulness are discussed.

NEO/33. COMPUTERIZED NEONATAL DATA BASE

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With the increasing use of computers, more and more health professionals, are drawn towards, the development of medically relevant computer applications.

Southern Railway Head Quarters Hospital, Perambur, Madras serves as a referral hospital for the whole of Southern Railway and other zonal Railways, and has approx 2000 deliveries/ year. A software programme for a neonatal data base and for analyses for the data fed was developed 1 year back, and has been in use since then. With this programme, the entry of data of each neonate, born in our hospital takes only 2-2-1/2 min., as the majority of filling is in numbers. Selective clinical data are easily retrievable for retrospective research. We also have as statistical package, which can analyze the whole data fed in the form of mean, mode, etc. The programme can be easily modified to allow for addition of new data fields. The system is quick, efficient, user friendly and easy to expand.

NEO/34. EFFECT OF CAESAREAN SECTION ON MORBIDITY AND MORTALITY OF NEONATES

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The study was conducted in a maternity hospital of Calcutta where there was no arrangement of Caesarean Section for first 23 years (1950 to 1973) from its formation and subsequently start of Caesarean Section for next 17 years (1973 to 1990). The study period therefore has been from 1951 to 1990. Total number of baby observed during the period is 77590 live born. During the period with no caesarean, the total number of live birth was 34806 (44.80%) of which instrumental delivery was 11,502 (33%) and normal delivery was 23,304 (67%) whereas after starting caesarean section, total number of

live born has been 42784 (55.14%) amongst whom there is a slight higher trend of normal delivery 34205(79%), instrumental delivery 3,897 (10%) and C.S. 4,592 (11%), incidence of caesarean section is found to be increasing from 10% to 27% and the instrumental delivery is decreasing proportionately from 19.75% to 9.2%. Caesarean Section is found to be common in higher age group with mean age 26.25 +(-) 0.34 as compared to the 24.00 +(-) 0.10 of normal delivery. Difference of mean age being 2.25 yr (t=6.43). No statistically significant difference in mean maternal age between normal and instrumental delivery (+=0.94) has been observed. There is definite higher incidence in C.S. delivery in comparison to instrumental delivery (t=3.88). Incidence of caesarean section is significantly higher in primigravida than multiparity and the mean parity of mother significantly lower 1.34 +(-) 0.05 (t=12.10) then normal and instrumental delivery which is 1.43 +(-) 07 (t=5.57). Incidence of neonatal mortality has come down considerably from mean 24.75 per thousand live birth in pre-caesarean section era to 13.66 in subsequent period with facility for C.S. The incidence of still birth is almost identical in both period. The neonatal death following C.S. is 1.6% whereas it is identical in both instrumental and normal delivery (.8%) No appreciable statistical change in the morbidity pattern in different types of delivery has been observed.

MISCELLANEOUS

*MISC/01. JUGULAR VENOUS CANNULATION IN CRITICALLY ILL CHILDREN

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This study is a prospective evaluation of percutaneous internal jugular venous (IJV) cannulation and its complications in a group of 98 critically ill, infants and children. The commonest indications for catheterization were central venous pressure monitoring, failure to get peripheral venous access and prolonged intravenous therapy. The mean age of the patient was 2.41 +(-) 3.08 years (range: 4 days - 12 years). Catheterization required 1.42 +(-) 1.03 punctures per patient. The success rate with one puncture was 78.4% increasing to 91.02% with two punctures. No significant difference was noted in the single puncture success rate in infants versus older children. The mean dwell time of the catheter was 5 .57 +(-) 54.43 hrs (4 hrs - 10 days). Significant complications encountered included, arterial cannulation (6 cases), local hematoma after removal (11 cases) and pneumothorax (1 case). Catheter contamination was seen in 22.4% of cases, and catheter related sepsis due to Klebsiella occurred in one patient. 37/98 patients expired, however none died due to complications of catheterization.

In conclusion, IJV is a quick and effective life-saving procedure which can be performed safely in paediatric patients. This venous access needs minimal preparation and eliminates the need for venesection. We recommend that understanding of its appropriate indications, techniques of insertion and recognition of complications be taught to those involved in paediatric care.

*MISC/02. MEDICATION COMPLIANCE IN CHILDREN; HOW CAN IT BE IMPROVED?

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Failure to take medication correctly may have far reaching consequences since the treatment may either lose its efficacy or become harmful. The study was undertaken to assess the magnitude and causes of non-compliance, so that remedial measures can be taken for improving medication compliance.

Four hundred patients were randomly selected from pediatric O.P.D. On subsequent visit, medication compliance was assessed by skilful interview (self-reporting). This method has the advantage of being least expensive and gets maximum co-operation from patients. Overall compliance was found to be 60%. Type of non-compliance was encountered as undermedication (35%), alteration in dosage schedule (31%), overmedication (8%). Several reasons for non-compliance were observed; forgetting (12%), discontinuing medication because symptoms have cleared up (27%), resistance of child (18%), apparent ineffectiveness of drugs (21%) and side effects of medication (8%). For short term acute illness, compliance declined rapidly after 2-3 days.

Reducing dosage frequency and limiting the number of drugs improved compliance especially when dosage schedule were also simplified. Compliance was higher (85%) in special clinic as compared to general pediatric OPD thereby emphasizing the need for special clinics for chronic diseases. Writing dosage schedule in Hindi, direct interaction with older children, counselling regarding disease course, possible

side-effect, allaying anxiety etc. and some other measures were found to improve compliance considerably.

For practice of rational drug therapy, there is urgent need for identification of causes of non-compliance so that effective remedial measures for improving compliance can be taken.

*MISC/03. CLINICAL SIGNIFICANCE OF POTASSIUM DISTURBANCES IN ACUTELY ILL CHILDREN

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We studied 727 sick children aged 1 month to 12 years, prospectively to determine the incidence and clinical significance of serum potassium disturbances at the time of admission to Pediatric emergency unit of our hospital.

Hypokalemia (serum potassium < 3.5 mEq/L) was detected in 13.9% (101/727) of the children. No significant association was found between hypokalemia and either the age or the sex of the children. The common underlying illness in these patients were diarrhea (30.1%), pneumonia (19.8%) meningoencephalitis (9.9%), hepatitis (5.9%) and heart disease (4.9%). The relative risk of mortality among hypokalemic children (15%; 15/101) was three and half times, than the normokalemic children (4.9%; 29/587) (OR 3.53, 95% confidence interval 2.52-4.95) ($p<0.001$); Hypokalemic children with associated hyponatremia (serum sodium < 130 Meq/L) had a higher mortality (19.2%) as compared to normonatremic patients (85%). Two hypokalemic patients had associated hypernatremia, (serum sodium > 150 Meq/L) and one of them died. The mortality also correlated significantly with the severity of hypokalemia. It was 38% (5/13) in children with serum potassium levels < 2.5 Meq/L; 16.1% (5/31) in those with levels between 2.6 - 3.0 Meq/L and 8.7% (5/57) in those with levels between 3.1 Meq/L ($p<.05$).

Hyperkalemia was detected in 5.4% (39/727) of the patients. The common underlying illness in these patients were diarrhea (18%), pneumonia (28%) septicemia (7.7%), meningoencephalitis (7.7%), neonatal jaundice (7.7%) and acute renal failure (2.0%). Of these 39 children, eight (20.5%) had associated hypernatremia and six (15.3%) hyponatremia; the remaining 25 children were normonatremic. The overall mortality rate in this group was 10.2% and did not differ significantly with associated hyponatremia or hypernatremia.

Potassium disturbances are common in sick children at the time of hospitalization and are associated with significantly increased risk of mortality. Early detection and prompt therapy may contribute in their improved survival.

MISC/04. POTASSIUM CYANIDE POISONING IN CHILDREN

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Accidental potassium cyanide poisoning is rarely encountered in medical practice and is almost unheard in children. Ten children aged 2-7 years were admitted in the pediatric emergency unit after having consumed some white powder.

Two children, who consumed the powder with water expired within one hour of consumption. Eight children only licked the powder dry. All these children recovered within 24 hours on supportive care only. Clinical manifestations in these children are cyanosis (4 cases), drowsiness (2 cases), pain in abdomen (6 cases) and nausea (5 cases). Postmortem examination of

viscera and chemical analysis powder confirmed potassium cyanide poisoning.

MISC/05. "SHE" IN THIRUVOTTIYUR I.C.D.S. PROJECT

Indira, N. Tamilarasi

Focus on Female Child in relation to

1. Pre-school a) Attendance Pattern (b) Feeding Pattern
2. Nutritional Status
3. Immunization Status
4. Educational Level in 6 to 15 Year Children in relation to Maternal Literacy Rate

METHODOLOGY:

The study was conducted at I.C.D.S. Project at Thiruvottiyur, Chengalpat District (Chengai Anna District) Tamil Nadu. Twenty out of Ninety Seven Anganwadi's were selected randomly. These Anganwadi's cover population of 22,295, of which male 11,224 (50.35%) Female 11,071 (49.65%).

From the Sample 3,537 children were in 0 to 6 years age group of which male 1,841 (52%) Female 1,696 (48%) was studied. Information relating to Pre-school attendance and Feeding patterns, Nutritional Status, Immunization Status and education level in relation to Maternal Literacy in 6 to 15 years was collected by Questionnaire from these selected Anganwadi's.

Period of Study: January '90 to July '90

Major findings are tabulated below:

Pre-school:

Attendance (a) area-wise attendance is equal in both cases M 44.36% F 45.34%

(b) Enrolment - Coverage enrolment for female children is more than that of male children. In ICDS attendance in both sexes is equal. Whereas there is a significant % difference (2%) in girls 32.99% attending private schools, compared to boys 24.14%. The drop-out rate among both sexes is the same.

FEEDING:

In all age group female children getting Fed (511) at Centres are comparatively lower than male children (572).

NUTRITIONAL STATUS:

Normally Nourished children are more among female (33.76%), Male (27.63%). Normal Grade and First Grade among female children is high and Third and Fourth Grade are lesser than male children.

Among children of Grade Three, female children are consistently less compared to male children, although number of Grade Three children seems to be more in older age group (6 months to 6 years) children in both level.

IMMUNIZATION STATUS:

Except BCG all vaccinations in I.C.D.S. have higher percentage of coverage. There is no significant difference between the two sexes.

EDUCATION:

Maternal Literacy:

Out of 11,071 Women, 17,33 women have studied 8th to S.S.L.C. and above. Among 6 to 15 years population in these centres, after leaving Pre-school (Private & ICDS), 1438 girl babies are continuing their education 83%.

This projection is in relation to Female literacy given in above population.

FAMILY PLANNING:

Out of 4,478 families, 1,301 families have undergone family planning. There comes the green signal for the female child in the form of practice of permanent Family Planning method with only girl children.

FUTURE PLAN OF ACTION:

In spite of our anxiety to study all the aspects of female child, due to several constraints to certain aspects in only 20 centres could be studied.

Our focus will be the following:

1) Longitudinal growth pattern
2) Mortality and Morbidity
3) Secondary level school, schooling of mothers and illiterate mothers - its impact in continuance of schooling among girls and boys.
4) Child marriage and its outcome - Maternal and Foetal
5) Social Abuse of Female child.

ACKNOWLEDGEMENT:

The study has been made possible because of the help and co-operation of Anganwadi Workers and Tmt. Devakumari who had helped in compilation. We take this opportunity to express my sincere gratitude to them.

MISC/06. DO TEFLON COATED INTRAVENOUS CANULAS REDUCE LOCAL TISSUE REACTIONS AT INSERTION SITE?

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Teflon coated intravenous (I/V) canulas are now being routinely used in many pediatric and neonatal units. Manufacturers claim that they can be left in place for several days without causing any significant local tissue reaction. We prospectively studied one hundred and fifty two newborns and older infants to assess the degree of local tissue reaction / thrombophlebitis caused at the site of intravenous teflon canulas (Viggo-Fenflon, 22/24 gauge, 25 mm) or intravenous scalp vein set (Top, gauge 23). All children below the age of one year were eligible for the study. However, only those children were included in whom the canula had remained in place at least 12 hours without any local swelling/extravasation. Exact time of placement of the canula/scalp vein was noted along with the type of i/v fluids administered, and the dose and concentration of the drugs given through this i/v line. A maximum of two i/v insertion per infant were taken as part of the study. Exact time of removal of the scalp vein/canula was noted down on the patients study proforma. The removal was done at the time of stopping i/v drugs and fluids or at the time when any swelling/redness was observed at the insertion site. At the time of removal, that portion of the canula/scalp vein needle which was embedded in the skin was cut/broken off from the body of the canula/Scalp Vein using a sterile scissors/artery forceps and allowed to drop directly into a tube containing a transport medium. The tube was then sent to the microbiology laboratory where the material was processed.

In the first phase of the study, tips of 32 scalp Vein needles and 30 i/v canulas were cultured. From 5 (15.6%) scalp vein needle tips organisms were grown - Staphylococcus epidermidis (4) and Candida albicans (1). Two (6.6%) canula tips also grew staph epidermidis. There was redness and/or swelling at the site of insertion in 40.6% of cases of scalp vein needles as compared to 23.3% of i/v canula cases. The mean duration for which the scalp vein needle

remained in place was 2.1 days compared to 3.8 days for canulas.

At this stage analysis showed intravenous teflon canulas to be causing lesser local reactions and staying in place for a longer period. However, 4 cases of ulceration at the insertion (2 in each group) caused us concern. Since all these 4 cases culture of the canula/needle tips were sterile a chemical irritant in the injected/infused material appeared to be the alternative positive factor. From here onwards, meticulous care was taken in diluting the injected drugs adequately and injecting very slowly. The i/v sites were also examined more often and use of scalp vein needle was completely given up in favour of the teflon coated i/v canulas. During this period of intensive observation and care 12.2% of the insertion sites still showed local reactions, but no case of ulceration at the site was seen.

Four (4.4%) canula tips showed positive cultures-Staph. epidermidis was grown from 3 cases and candida was cultured in one case. Two of these 4 cases showed local reaction while in the other two no local reaction was seen. Mean period of insertion was 4.3 days.

Nine (5.9%), out of the total of 152 cases, had positive blood cultures (septicemia). However, in only 3 of these cases was any organism grown from the canula tip. Further, in all the 3 cases organism grown at the two sites were different.

Thus, changeover from scalp vein needles to teflon coated i/v canulas, meticulous care in dilution of the drugs and frequent observation of the site of i/v insertion succeeded in reducing the incidence and intensity succeeded in reducing incidence and intensity of local reaction. Also, the colonization of the canula tip occurred infrequently and with organisms known to be skin commensals rather than with known pathogens.

MISC/07. CHEDIAK HIGASHI SYNDROME REPORT OF 2 CASES

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This is a autosomal recessive disorder characterized by 1. Partial occulo-cutaneous albinism with nystagmus and photophobia. 2. Frequent pyogenic infections, and 3) giant lysosomal granules in leucocytes. Approximately 70 cases have been reported in the world, and 2 cases from India. We are reporting 2 more cases of this rare disorder who had classical, clinical and haematological picture.

MISC/08. PERIPHERAL LYMPHADENOPATHY - A DIAGNOSTIC ENIGMA

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Peripheral lymphadenopathy is a diagnostic problem in Paediatric practice. We studied 250 cases of lymphadenopathy at Medical College, Kottayam for a period of two years, to study the clinical pattern of various diseases causing lymphadenopathy, etiologic factors of lymphadenopathy and frequency of involvement of various groups of lymph nodes in relation to etiologic factor.

On analysis it was found that 62.7% of cases were acute lymphadenopathy and 37.6% Chronic lymphadenopathy. A definite etiologic factor could be detected only in 86.4% of cases after detailed investigations. Regarding the etiology of lymphadenitis-Acute pyogenic lymphadenitis - 40%, Tuberculous lymphadenitis - 12.8%, Infectious Mononucleosis - 8.8%, Acute Leukemias - 8.6% were leading causes. Lymph node juice Aspiration and culture was found

to be useful investigation in etiologic diagnosis of 68% of Acute pyogenic lymphadenitis. Commonest organism grown was Beta hemolytic streptococci - 28%, followed by staphylococcus Aureus in 24%, 60% of the etiologically unproved cases showed eosinophilia, and they responded to Diethyl - Carbamazapine therapy. Predilection of lymphadenopathy in relation to etiologic factors shall be discussed. To conclude, in most of instances, diagnosis of lymphadenopathy can be arrived at by careful physical examination and investigations. But "what in doubt, cut it out" is the correct policy.

MISC/09. EYE DISEASES AMONG SCHOOL CHILDREN IN VIDARBHA

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A total of 2157 school children in the age group of 5 to 15 years were assessed for ocular morbidities. The overall prevalence of eye diseases was 34.4%. Vitamin A deficiency (24.9%), refractive error (4.8%), and trachoma (3.1%) were the commonest eye diseases observed. The prevalence of vitamin A deficiency and trachoma was significantly more in rural children when compared with their urban counterparts (<0.001). Vitamin A deficiency was significantly more common in the children in age group 5-10 years, while refractive error and trachoma as significantly more prevalent in 11 to 15 years.

MISC/10. A STUDY OF IMMUNIZATION STATUS OF CHILDREN ATTENDING PAEDIATRIC OUTPATIENT DEPARTMENT

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This study was performed with the aim to find out the immunization status from Oct., 1989 to April, 1990 in which 2000 consecutive parents of children between the age group of (1-6) one to six years attending O.P.D. were interrogated. The status was considered as fully immunized if child had received three doses of D.P.T. and O.P.V. and one dose of B.C.G. and measles by 1 yr. of age, partially immunized while receiving any one of the vaccine and un-immunized while not receiving even a single dose of any vaccine. Out of 2000 children (1300 boys and 700 girls) 520 (26%) were fully immunized, 944 (47.2%) and 536 (26.8%) were partially and un-immunized respectively. 1250 (62.5%) and 750 (37.5%) were Hindu and Muslims by religion. Immunization coverage was significantly better in children belonging to non SC/ ST families (P 0.001) as coverage in non SC/ST, SC and ST were 1368 (68.4%), 348 (17.0%) and 284 (14.2%) respectively. As permodified Prosad's classification 100 (5%), 400 (20%), 900 (45%),and 600 (30%) were belonging to the class I, II, III & IV of them, 99%, 1%, 0%; 67.5%, 27.7%, 4.8%; 4.8%; 44.39%, 36.09%, 19.51% and 20.69%, 40.47%, 38.84% were fully, partially and un-immunized respectively. Thus, the immunization status was betterin children belonging of higher socio-economic class and the relation was found to be highly significant (P 0.001), while the difference was insignificant (P 0.05) as regards to religion and sex of the child. The coverage was significantly (P 0.001) better with literacy of parents as 47.24%, 39.29% and 12.84% of children found to be fully, partially and un-immunized in the group of literate parents while in illiterate group these figures were 17.27%, 26.08% and 56.65%. And reasons of immunization failure were also interrogated and suggestions have been made accelerate the coverage.

MISC/11. ANTHROPOMETRIC IDENTIFICATION OF LBW NEONATES UNDER FIELD CONDITIONS

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A total of 1,000 single live born infants (519 males and 481 females) were subjected to anthropometry within 24 hours of birth to find out the best simple anthropometric indicator for identifying LBW neonates. Besides this, anthropometric data were obtained to serve as base-line and also correlation was studied between birth weight and crown-heel length (CHL), head circumference (HC), chest circumference (CC), mid-arm circumference (MAC), thigh circumference (TC) and calf circumference (Cf.C).

The data collected was subjected to statistical considerations like computation of means, standard deviation, standard error of mean, 't' test, correlations, regression equations, regression lines, cut-off values, sensitivity, specificity, positive and negative predictive values.

The incidence of LBW infants (< 2,500 gm) in this series was 40.5% (23.1% males and 17.4% females), but it came down to only 6.4% when a birth weight of < 2,000 gm is taken as criterion for LBW.

The mean values calculated for the total number of cases (n=1,000) for birth weight, CHL, HC, CC, MAC, TC, and Cf.C were 2766.10 +(-) 624.320 gm, 48.96 +(-) 2.695, 32.99 +(-) 2.230, 30.53 +(-) 2.717, 8.99 +(-) 1.347, 15.05 +(-) 1.412 and 10.00 +(-) 1.391 cm., respectively. The corresponding values for males were (n=519) 2778.40 +(-) 623.17 gm, 49.25 +(-) 2.657, 33.25 +(-) 2.781, 30.81 +(-) 2.694, 9.17 +(-) 1.346, 15.18 +(-) 1.406 and 10.16 +(-) 1.368 cm., respectively, and those for females (n=481) were 2753.80 +(-) 624.230 gm., 48.68 +(-) 2.702, 32.74 +(-) 2.248, 30.26 +(-) 2.711, 8.81 +(-) 1.327, 14.93 +(-) 1.407 and 9.84 +(-) 1.395 cm., respectively.

Statistically significant higher mean values were observed for males as compared to those for females for all the parameters studied. High correlations were noted between all the anthropometric indicators for both the sexes. The correlation of birth weight was maximum for TC followed by MAC in males. However, in females the maximum correlation was observed with MAC followed closely by TC. Regression equations were also derived and regression lines were drawn for each parameter.

Cut-off values for identifying < 2,500 gm and < 2,000 gm birth weight neonates were calculated for each indicator separately for males (n= 519) and females (n=481) and also, for both sexes combined (n=1000). TC of < 14.5 cm and < 13.4 cm had the best sensitivity, specificity and predictive value for identifying infants with birth weight of < 2,500 gm and < 2,000 gm, respectively. MAC appeared to be second best with the corresponding cut-off values of < 8.5 cm and < 7.4 cm.

The study has revealed that an additional false positive and false negative error is noticed with the use of single cut-off values (sexes combined, n = 1000) as compared to the use of separate cut-off values for males (n=519) and females (n=481), i.e., as many as 3-10% of high risk cases will be missed in community and approximately 3-26% of low risk cases will be unnecessarily referred to specialized centres, if a single cut-off value (sexes combined) is used instead of separate values for males and females. In other words, the study has demonstrated the importance of sex differences in analyzing anthropometric data while assessing its usefulness in community.

In conclusion, TC at birth appears to be best simple, reliable and cost-effective alternative to birth weight in the community. MAC is equally useful as it has also high degree of reliability. These measurements are easy to learn and can conveniently be introduced in the community for use by health workers to detect neonates who are at high risk and who need specialized referral care for preventing mortality and morbidity.

SYMPOSIA SUMMARIES

SYMPOSIUM ON "CONTEMPORARY ISSUES IN PEDIATRIC NEPHROLOGY IN INDIA"

SUMMARIES:

1. MANAGEMENT OF RELAPSING OR STEROID DEPENDENT NEPHROTIC SYNDROME

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Idiopathic NS is characterized by a remitting and relapsing course, and it's striking susceptibility to corticosteroid therapy. About 85 to 93% respond and undergo remission, and are presumed to have minimal change histology. Approximately 50% of them do not relapse or relapse infrequently. As many as 40-60% have frequent relapses with or without steroid dependency. Remission: Reduction in Proteinuria to 4mg/hr/m2 (Albustix O or trace) on 3 consecutive days.

Relapse: Reappearance of Proteinuria - 40mg/hr/m2 (Albustix ++ or more) for 3 consecutive days along with edema.

Frequent Relapser (FR): 2 or more relapses in 6 months. Steroid Dependent (SD): Relapse on reducing the dose of steroids or within 14 days of cessation of therapy.

Amongst our 110 pts, 95 (86%) responded to steroids of whom 35 (36%) never relapsed, 32 (34%) relapsed infrequently and 28 (30%) were FR or SD.

Early identification of children likely to be FR/SD is important to prepare the patients and their families. Though not absolutely reliable, certain parameters reported to be helpful are number of relapses during first 6 months, presence of hematuria, hypertension or azotemia, immunoglobulin levels, T4/T8 ratio and function, HLA-B12 marker, adrenocortical suppression and histopathology.

Effective management of FRs is a challenging problem. When a patient responds to corticosteroids initially, he would generally continue to do so even if he is a FR or SD but he does need more intensive therapy. Modifications of the standard steroid therapy continue to be the mainstay, as immunosuppressive agents are potentially more toxic. Standard ISKDC regime of 60mg/m2/day or 2mg/kg/day of prednisolone in 3 or 4 divided doses is given till the induction of remission. Subsequent to remission, the regimes followed vary with different workers but almost all advocate the prolonged administration of steroids for periods upto 6 to 12 months. The dosages used are 40mg/m2 or 1.5mg/kg daily or on alternate days. or on 3 consecutive days in a week given as a single dose and tapered gradually. Our practice has been to switch over to alternate day therapy of prednisolone in dose of 40mg/m2/day on remission and taper gradually in 5-10 mg decrements over 3 to 6 months. If patient develops proteinuria, we go back to the previous dose on which he has protein free and then slow down the tapering process. Patients who continue to have frequent relapses despite prolonged or repeated cycles of steroid therapy and those who become steroid dependent or resistant exhibit various side effects and need alternative therapy.

Immunosuppressive agents often succeed in producing longer lasting remission and also restoration of steroid susceptibility in some. Along with maintenance steroids, a 8 to 12 weeks course of cyclophosphamide or chloram-

bucil is given in the dose of 2-3 mg/kg/day and 0.1-0.2 mg/kg/day respectively. The efficacy as well as the toxicity of both are comparable.

Other therapeutic measures tried with favorable reports include IV pulse methyl prednisolone and cyclophosphamide, nitrogen mustard, vincristine, cyclosporin A, immunomodulator like levamisole, nonsteroidal antinflammatory drugs like indomethacin, antiplatelet and anticoagulant drugs and antiallergic and desensitizing measures but need further evaluation.

Adequate attention should be given to proper diet, relief of edema, treatment of infection and psychological support to the child and his family.

2. ASSESSMENT OF RENAL FUNCTION IN CHRONIC RENAL DISEASES

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The majority of renal diseases can lead to progressive nephron loss and death. The number of surviving nephrons (Residual potential) bears a close relationship to the measured excretory function or G.F.R. (Residual function) although this residual function is always higher than the residual potential as the surviving nephrons hyperfiltrate to compensate for lost nephrons. The periodic assessment of renal function is mandatory for the management of chronic renal diseases in order to diagnose renal impairment, monitor the course of the disease and to assess the impact of therapy on the disease.

METHODS OF ASSESSING RENAL FUNCTION: The standard method of measuring GFR is based on the concept of clearance which measures the overall capacity of the kidney to remove a substance from circulation and is expressed mathematically as UV/P.

U = Urinary concentration of the solute

V = Volume of urine in given unit of time

P = Plasma concentration of solute

When this substance is metabolically inert and excreted exclusively through the kidney by glomerular filtration then GFR=UP/V. INULIN is the only substance that meets all these requirements but owing to a number of practical difficulties, estimation of inulin clearance is not used clinically to measure GFR. ENDOGENOUS CREATININE CLEARANCE: (CCr) is most widely used in clinical practice owing to its convenience. However, Ccr is not truly representative of GFR as Creatinine is excreted not only by filtration but variably also by tubular secretion and Ccr tends to over estimate GFR at lower levels of renal function by around 20%. In addition, the requirement for timed 24 hour urinary collection, and the wide laboratory errors in the measurement of creatinine make it an insensitive and poorly reproducible measurement of GFR.

PLASMA CLEARANCE: The principle of clearance is applied by measuring the rate of fall in the plasma of a suitable marker substance - thus avoiding the need for any urinary collection. Na - iothalamate, 125 I Na - iothalamate, 51Cr EDTA and 99m DTPA are substances suitable for this study. It is particularly useful in children, especially in those with obstructive uropathy and is accurately reproducible. However, multiple blood samples are required, it is time consuming and requires a special scintillation counter for measuring the radio-isotope marker.

RENAL SCINTIGRAPHY: Analysis of the uptake and excretion of 99mTc DTPA by the

kidney using an external gamma camera enables the GFR to be estimated at the same time as the dynamic scan and allows the measurement of single kidney GFR. A similar reliable assessment of individual kidney function can be obtained following 99mTc DMSA static scans. It is particularly suitable for children as it does not need a constant infusion, urine or blood sampling.

TRADITIONAL INDIRECT MEASURES for screening loss of renal function is to evaluate BUN and S.Cr. The latter is a better indicator of renal function and the doubling of SCr reflects a decrease in GFR by half. However, owing to a wide normal range both BUN and SCr do not increase to levels outside the normal range until residual function is <70% and residual potential <35%. Prediction of GFR in children from height and PCr values has been found to be more accurate than Ccr in estimating GFR under steady state conditions.

GFR = Ht/Pcr x K where Pcr is in mg/dl, Ht is in cms and
k = .55

In established renal impairment, the rate of deterioration of GFR can be estimated by plotting graphically the serial values of the reciprocal of Pcr i.e. 1/Pcr as a function of time. This describes a linear regression and can be used to monitor the progression of the disease as well as to predict the time when end stage renal failure will develop.

3. MEDICAL MANAGEMENT OF CONGENITAL OBSTRUCTIVE UROPATHY

Mahrukh Joshi

Obstruction of the urinary tract is a common cause of loss of renal function. If detected and treated in time it is potentially reversible. Congenital obstructive uropathy is the main cause of End Stage Renal Disease (ESRD) at 5 years, and third most common cause of ESRD between 11 and 17 years after glomerulonephritis and pyelonephritis. Symptoms and signs may be minimal or absent and diagnosis calls for a high index of suspicion. The extent of loss of nephron function is related to the duration of obstruction as well as its completeness, and hence the importance of early detection and treatment. With improved dialysis and transplant techniques, children are now entered into ESRD programme at an early age. Hence, the pediatric nephrologists should be aware of the difficulties encountered in the long term management of these children.

For the proper management of these problems it is necessary to know the levels of obstruction as well as the basic pathophysiology.

The obstruction can be above the bladder, at the calyceal infundibulum (Hydrocalysis), renal pelvis, mid ureter, or the uretero-vesicular junction (ectopic ureter, ureterocele). Hydronephrosis due to uretero-pelvic junction obstruction is the most common form of obstruction above the bladder. Below the bladder posterior urethral valve is the most frequent lesion.

In the fetus, it can lead to patent urachus, ureteral dilatation, vesico-ureteral reflux, urinomas, urinary ascites, oligohydramnios. Oligohydramnios can lead to Potter's facies and hypoplastic lung. Hydronephrosis leads to type 4 cystic dysplasia and renal failure, while hydroureter and megacystis lead to abdominal muscle deficiency syndrome 'Prune belly'.

Pathophysiology:

Four mechanisms are responsible for the loss of renal function:
1. Pressure atrophy. Occurs early during obstruction. Maximal effect is seen on the distal and collecting ducts. (2) Intrarenal reflux

can lead to renal scarring. (3) Urinary tract infections due to stasis and vesico ureteral reflux. (4) Ischemia - renal blood flow decreases particularly in the inner medullary part damaging the distal tubules and the collecting ducts.

The extent of renal damage depends upon the site of obstruction whether it is unilateral or bilateral, complete or partial, and acute or chronic. Most congenital obstructive uropathies are chronic partial obstructions.

The phenomenon of post-obstructive diuresis seen after relief of obstruction, can be due to physiological causes like excretion of retained salt and water and administration of excess intravenous fluids or osmotic diuresis due to retained urea and administered glucose. It can be a consequence or renal tubular damage impairing its capacity to reabsorb sodium and water (Nephrogenic diabetes insipidus). There are defects in the acidification mechanism in the proximal and distal tubules as well as in excretion of potassium. This leads to hyperkalemic hyperchloremic renal acidosis. Hormone related abnormalities like insensitivity to aldosterone vasopressin parathormone as well as altered production of prostaglandins and renin angiotensin are seen.

Medical Management:

Nephrologists must anticipate the following problems: (1) Abnormalities of the physical, mental and emotional growth and development (2) Calcium and phosphorous metabolism abnormalities, (3) Acidosis (4) Hyperparathyroidism (5) Anemia (6) Hypertension (7) Urinary tract infections (8) Polyuria seen with high output renal failure (9) Psychological problems

For optimum growth, diet should aim at adequate caloric intake. Protein intake should be optimally balanced - 4 to 6% of total calories as essential aminoacids and their ketoanalogues. Bicarbonate wasting and acidosis should be corrected by giving sodium and potassium citrate. Phosphate intake should be low, and if necessary phosphate binders and vitamin D analogues should be given. Salt supplements are usually required when the kidneys are dysplastic. Growth hormone is renotrophic and may hold hope in the future. Anemia requires repeated transfusions with all its attending risks. Availability of synthetic erythropoietin in future may considerably decrease this problem.

Control of blood pressure is also very important to prevent further damage to the kidneys. Converting enzyme inhibitors are more effective.

Attention should be paid to all intercurrent infections and events like gastroenteritis should be treated promptly with adequate fluids and electrolytes. Periodic and regular evaluation of serum electrolytes, renal functions and bone x-rays is necessary for early detection and prompt treatment of medical complications of renal failure.

Antenatal intervention is only required when there are no life threatening associated defects, kidney function is good in presence of hydronephrosis and fetus is not mature enough for preterm delivery and management.

4. RATIONALE OF DRUG THERAPY IN HYPERTENSION

K. E. Phadke

The aims of treatment of hypertension include

1. Prevention of complications like encepha lopathy, congestive cardiac failure.
2. Amelioration of symptoms like headache, vomiting
3. Preservation of renal function.

4. Prevention of target organ damage:- Heart, Eyes, Kidneys, etc.

Common conditions with hypertension which a Pediatrician comes across in day-to-day practice are

1. Post infectious nephritis.
2. Hemolytic Uraemic Syndrome
3. Renovascular hypertension, coarctation.
4. Renal Insufficiency.
5. Drug Induced: Steroids.

Choice of drug therapy depends on

1. Degree of hypertension.
2. Cause of hypertension.
3. Side effects of drugs, patient compliance. Combination of drugs should be avoided.

Antihypertensives may be broadly divided into

1. Diuretics
2. Vasodilators
3. Adrenergic inhibitors
4. Drugs acting on renin-angiotensin system
5. Calcium channel blockers.

Diuretics: In mild hypertension, diuretics alone may control blood pressure satisfactorily. In more severe hypertension, they may be used to enhance the effects of other drugs. Furosemide is more likely than thiazide diuretics to cause marked volume contraction, hypokalemia and metabolic alkalosis. They should be used in situation in which the patient has edema, refractory hypertension or azotemia or is taking potent salt-retaining drugs, such as high dose steroids or potent vasodilator drugs. Aldosterone antagonists are useful in primary hyperaldosteronism.

Vasodilators: They decrease peripheral vascular resistance at the arteriolar level and hence lower systemic blood pressure. Their use is limited by resultant sodium retention which may be counteracted by diuretics. Amongst this group are hydralazine, minoxidil, prazosin, Na nitroprusside, diazoxide.

Adrenergic inhibitors:- These include depleting agents like reserpine, drugs causing blockade of neurotransmitters like alpha methlydopa, B blockers,, < blockers, ganglionic blockers.

Converting enzyme inhibitors: These are specific oral agents for treating renin-mediated hypertension. In addition to causing neutropenia, skin rashes, proteinuria, reversible acute renal failure has been reported. Side effects may be less with newer generation of these drugs i.e. Enalapril group of drugs.

Calcium channel blockers have direct action on arteriolar smooth muscle resulting in reduction of peripheral vascular resistance.

Drugs for hypertensive crisis: Sublingual nifedipine is the drug of choice in hypertensive emergencies. Other drugs which may be used include diazoxide, Na Nitroprusside.

General Practical Guidelines:

Mild Hypertension: Salt restriction, diuretics.

Moderate Hypertension:
Hydralazine
Alfa-methyl-dopa
Clonidine
Diuretics

Severe Hypertension:
Ca channel blockers
ACE inhibitors
Diuretics

Hypertensive Crisis:
Sublingual Nifedipine
Diazoxide

Special Circumstances:
alpha & beta blockers in Pheochromocytoma

Drug dosages:

Hydralazine: im/iv 0.2 mg/kg/dose
po 1.0 mg/kg/day

Diazoxide:- 2-5 mg/kg/dose

Na nitroprusside: 0.5-8.0 ug/kg/min.

Minoxidil: 0.2 mg/kg/dose, 5 mg maximum initial dose.

Prazosin: not more than 1 mg as initial dose.

Methyl dopa: 10 mg/kg/day; Iv 5-10 mg/kg/dose

Propranolol: 1 mg/kg/day

Captopril: 3-6 mg/kg/day

Reserpine: iv 0.07 mg/kg/dose; po 0.02 mg/kg/day

Nifedipine: 250 ug/kg/dose sublingually

Nonpharmacological therapy of hypertension includes salt restriction, weight control, dynamic exercises, behavioral therapy, yogic exercises, dialysis, hemofiltration; angioplasty and surgery in some cases.

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